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FRONTISPEICE.



A VIEW OF THE INTERNAL OR SENSIBLE FOOT.

A TREATISE
ON
VETERINARY MEDICINE,

IN FOUR VOLUMES.

VOL. I.

CONTAINING

A COMPENDIUM OF THE VETERINARY ART;

OR, AN

ACCURATE DE[redacted]ON OF THE DISEASES OF THE HORSE,

MODE OF TREATMENT;

PHYSIOLOGY OF THE FOOT; AND

AND PRACTICE OF SHOEING.

ILL[redacted]RATED BY PLATES:

With Obs[redacted]on Stable Management, Feeding, Exercise, and Condition.

BY JAMES WHITE,

OF EXETER,

Late Veterinary Surgeon to the First or Royal Dragoons.

DEDICATED, BY PERMISSION,

TO HIS ROYAL HIGHNESS THE DUKE OF YORK.

THE ELEVENTH EDITION,

CONSIDERABLY ENLARGED,

AND WITH ADDITIONAL PLATES.

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TO HIS ROYAL HIGHNESS

FIELD MARSHAL

THE

DUKE OF YORK, K. G.,

COMMANDER IN CHIEF

OF HIS MAJESTY'S FORCES,

&c. &c.



SIR,

Your Royal Highness's gracious condescension, in having extended your patronage and sanction to this small Treatise, is a convincing proof, that no attempt to render service to our military establishment passes unnoticed, and that the cause of humanity will ever find in your Royal Highness a most ready protector. The following observations have been suggested by considerable experience, arising from the nature of the service in which, for several years, I have had the honour to be employed by his Majesty; and have been collected with caution and indus-y,

under the hope (which cannot now but become more sanguine) that they may not be found wholly inadequate to promote the purposes for which they were intended.

I am, with the most profound respect,

Your Royal Hig[illegible]ness's

Most devoted, [illegible]ed,

And humb[illegible],

J. [illegible]TE,

Late Vet. Surg. Royal Dragoons.

PREFACE

TO THE

EIGHTH EDITION.

THE Author's most sanguine expectations must have been gratified by the sale of seven large impressions within a short time; and his gratitude to the public, who had so kindly patronised him, claimed from his hands whatever more mature reflection and additional experience had dictated. Though anxious to perform this task, ill health and professional engagements have prevented him, until the present edition was called for. Some of the additions have been incorporated into the work; but it was found necessary to give the greater part as an Appendix, which rendered some repetitions unavoidable; he trusts, however, these will be

pardoned, when the importance of a more minute detail of symptoms and of a more varied plan of cure is considered. The only addition to the article of shoeing is an improved method of shoeing flat and convex feet. For this the author is indebted to the Honourable Newton Fellowes of Eggsford, whose reputation as a sportsman is equalled by his accurate knowledge of the general management of the horse. The liberal support which the author has experienced from this gentleman, during his residence in Devonshire, claims his warmest acknowledgments. The patronage with which the public have honoured him will ever be remembered with gratitude, and stimulate him to continue his exertions in contributing to improve the condition of the most useful of animals.

Veterinary Establishment,
Exe Island, Exeter.

A

COMPENDIUM

OF THE

VETERINARY ART.

CHAPTER I.

INTRODUCTION.

THERE is scarcely a disease to which the Horse is liable, that will not appear, upon a strict examination, either to consist in, or to be a consequence of inflammation, which, when it attacks any of the internal organs, gives rise to his most dangerous diseases: thus an inflammation of the lungs, bowels, or any of the internal parts, will produce that kind of derangement in the system, which is termed a fever, the violence of which will be proportioned to the degree and extent of the inflammation, and the importance of the inflamed organ in the animal economy. It appears necessary, therefore, as an introduction to this work, to give a sketch of the anatomy of those internal organs, and to point out the va-

rious functions they peform; after which, it will be proper to give a general description of inflammation, with it's different modes of termination.

We, sometimes, however, meet with diseases which seem to originate in debility; but many of these will be found, if carefully attended to at the commencement, to begin with some degree of increased action of the system; and though bleeding may be improper, a mild purgative will generally prove very beneficial.

In the former editions of this work, scarcely any notice was taken of these diseases: we shall, in the present, therefore, describe particularly, under the head *Fever*, their symptoms, causes, and most effectual mode of treatment.

STRUCTURE AND FUNCTIONS OF THE INTERNAL ORGANS.

THE hollow part of the body is divided into two cavities by a strong muscular partition, termed the *diaphragm* or midriff; the anterior part is named the *thorax* or chest; and the posterior, the *abdomen* or belly. The thorax contains the *lungs* and *heart;* the abdomen, the *stomach, intestines, liver, spleen* or milt, *pancreas* or sweetbread, *kidneys,* and *bladder.*

Of the Lungs.

IN describing the lungs, it is necessary to begin with the *trachea* or windpipe, which is a cylindrical cartilaginous tube, extending from the throat to the chest. The trachea is not made up of one entire cartilage, but of several cartilaginous rings, which are united by strong membranes; and such is the elasticity of these cartilages, that the tube is enabled to preserve it's cylindrical form, even when it receives considerable pressure, and thereby affords free ingress and egress to the air in respiration. The mem-

branes also are elastic, so that the windpipe may be either elongated, shortened, or bent, in some degree. The upper part of the trachea is composed of stronger cartilages than the other parts of the tube, and is termed *larynx*: to this is connected a curious kind of valve, called *epiglottis*, which is always open, except in the act of swallowing: it is then forced down upon the larynx, so as to prevent food, or any thing which may be passing over the throat, from falling into the windpipe. Where the trachea joins the chest, it divides into numerous branches, which, gradually becoming smaller, at length terminate in minute cells: the lungs, indeed, are made up of the ramifications of the trachea and blood-vessels; the interstices being filled with a cellular membrane, which serves not only to unite them, but likewise to give a uniform and homogeneous appearance to the whole mass. The lungs are covered with a fine delicate membrane, called the *pleura*, which also covers the internal surface of the ribs and diaphragm, and, by stretching across the chest from the spine to the breast-bone, divides the thorax into two cavities; this part of the pleura is therefore named *mediastinum*. On every part of the pleura, fluid is secreted for the purpose of preventing a cohesion of the parts; and when this is produced too abundantly, it con-

stitutes the disease termed hydrothorax, or dropsy of the chest. The pleura, though so fine a membrane, is impervious to air; which may be proved on the dead animal, by rupturing one or more of the small branches of the windpipe, and then blowing into the lungs. The air, which is forced in, will then escape through the ruptured parts, and be diffused in the cellular membrane*, so as to

* The cellular membrane is that which connects the various parts of the body with each other; it not only unites the skin to the flesh, and the large muscles to each other, but is employed also to connect the minute fibres which compose the skin, muscles, &c.; and, therefore, it is inferred, that the cellular membrane exists in every part of the body, however minute; and is in some parts so fine, as to be invisible; while in others, as between the shoulder blade and the ribs, it is very conspicuous. The cellular membrane is composed of cells of various sizes, which communicate freely with each other, so that, if a blowpipe be put into one of the cells, and air forced through it, all the neighbouring parts will be blown up to a considerable size. A familiar example of this is the practice among butchers of blowing up the cellular membrane of a shoulder of veal. It sometimes happens in the case of a fractured rib, that one end of the bone is forced into the lungs, so as to wound the branches of the windpipe and the pleura; the air, which is inspired, will then escape; and, as the wound communicates with the cellular membrane between the muscles of the ribs, the air gradually diffuses itself through all the contiguous parts; and we have sometimes seen the whole body, and even the cellular membrane about the eye, inflated from this cause.

make the lungs appear much larger than they were before. When the air is at length forced to the surface of the lungs, it will be prevented from escaping by the pleura, which will be blown up, and appear like an inflated bladder on the surface of the lungs. If this be punctured, the air will soon escape, and the lungs will return to their original size. This circumstance is noticed, as it is supposed to happen sometimes in the living animal, and to be the cause of broken wind. (See *Broken Wind* and *Chronic Cough*.) The lungs are divided into two parts, or lobes, one of which is situate in each cavity of the thorax: this division seems to have been provided in case of accidents, it having been proved, that when one lobe is incapable of performing it's function in consequence of injury or disease, the other has been found adequate to the support of life.

The lungs are the organs of respiration or breathing: but they do not appear to be *actively* concerned in the performance of this office: when the diaphragm and the muscles of the belly and ribs contract, the cavity of the thorax is considerably diminished, and the lungs so compressed, that all the air contained in them is forced out through the windpipe: when this has been effected, the muscles relax, and the thorax returns to it's original size. There would now be

a vacuum between the internal surface of the ribs and the external surface of the lungs, did not the air rush in through the windpipe, and so distend it's branches and cells, as to make the lungs completely fill the cavity. Thus are the lungs constantly employed in inspiration and expiration; and this process, which we call breathing, is carried on by the combined action of the diaphragm, and the muscles of the ribs and abdomen. It is supposed that the *elasticity* of the lungs, or rather of the branches of the windpipe, materially contributes to this important action, in the same manner as a bottle of elastic gum, or Indian-rubber, fills itself either with air or water, from it's great elasticity. If a small pipe or quill be tied to the mouth of one of those bottles, and the air pressed out by the hand; as soon as the pressure is removed, the bottle will resume it's original form, and consequently be filled with air again. If the mouth of the bottle or the pipe be put into water after the air has been pressed out, on removing the pressure, the bottle will be filled with water*.

* It has been supposed, that, if an opening were made in the side, so as to admit the air into the chest, the lungs would collapse: I was induced, therefore, to make the following experiment:—

I made an opening on both sides of a horse, so that I

Of the Heart.

THE heart is placed nearly in the middle of the thorax: it is rather conical in it's form, the apex inclining towards the left side; it's base attached to the bones of the back and ribs: it is loosely invested with a membrane or sac, termed *pericardium*, vulgarly *heart-bag*. This sac always contains a small quantity of fluid, which serves to lubricate it's internal surface, as well as the surface of the heart, to prevent their cohesion, and suffer them to move freely upon each other. Sometimes this fluid accumulates, from a diseased action of the vessels which form it, to a considerable degree. This kind of dropsy generally accompanies that of the chest. The heart is divided into two cavities, termed *ventricles*, each of them having a small hollow appendage, which, from a slight resemblance it bears to a dog's ear, is named *auricle*. The blood-vessels proceed from these cavities, the arteries from the ventricles, the veins from the auricles; the former serving to carry the blood from the heart to every

could introduce my finger into the chest. A tube was then put into the openings, so as to give free admission to the air. The horse was kept in this state nearly half an hour without appearing to suffer any inconvenience from it.

part of the body, for the purposes of nourishment, secretion of the various juices, and stimulating the system to action, as well as for furnishing the various parts with the vital principle; the latter conveying back the blood, thus deprived of it's essential parts, to the heart, that it may be renovated by circulating through the lungs, as we shall now describe more particularly. When the left ventricle is full of blood, it contracts so powerfully as to force it's contents into the *aorta*, or grand artery, by which the blood is distributed all over the body; it is then taken up by the *veins*, and conveyed by them into the *right auricle*, whence it flows into the *right ventricle*; this also, when it is sufficiently distended, contracts upon it's contents, and propels the blood into the *pulmonary artery*, by which it is conveyed to every part of the lungs. The *pulmonary veins* then receive it, and convey it to the *left auricle*, whence it is propelled into the *left ventricle*, that it may again be distributed by the *aorta* to every part of the body.

The blood is thus continually circulating through the body; and this process may be considered as one of the most important actions that is performed in the animal machine. If it be stopped for a few seconds, all motion is suspended; and if it be prevented a longer time from going on, vitality is destroyed. The func-

tion of the lungs is of equal importance in the animal economy, and cannot be stopped even for a short time, without suspending or totally destroying animation. Ancient physiologists had a very imperfect idea of the manner in which these organs so essentially contributed to the support of life: the moderns, however, have been more successful in their researches; they have discovered that the blood derives from the air, which is taken into the lungs, the most important properties, without which it would be a useless vapid mass, totally inadequate to the purposes for which it was designed. If we examine the blood in the *left ventricle* of the heart, and in the arteries, it will be found of a bright scarlet colour, and replete with those properties which render it capable of nourishing the body, and stimulating the whole system to action: in the *veins* it becomes of a much darker colour; and when it arrives at the *right ventricle* is nearly black, and destitute of those enlivening qualities, which it possessed in the *left ventricle*. Had not the Deity then provided some means for it's renovation, it would have been quite unfit for a second circulation, and the duration of life must have been short indeed; but from the *right ventricle* it is conveyed by the pulmonary artery to the lungs, at the moment they are distended with air; here the

blood undergoes a wonderful alteration, it resumes it's bright scarlet colour, and is returned by the pulmonary veins to the *left* side of the heart, with all it's original and essential qualities restored to it. It is proper to observe, that there are valves placed in such situations, as effectually prevent the blood from taking a retrograde course. Were it not for this contrivance, the blood would as readily be forced into the left *auricle* as into the great *artery*, when the left *ventricle*, which lies between them, contracts, or shrinks up; and so of the other parts.

Hence we may learn how important are the functions of respiration and the circulation of blood, how essential to the life of animals, and how dependent they are on each other.

Viscera of the Abdomen.

HAVING finished our description of the thoracic viscera, we proceed to notice those of the *abdomen*, or belly; the first and most important of which is the *stomach*. Whatever this organ receives is conveyed to it by a long muscular tube, named *œsophagus*, or gullet. The œsophagus originates in the throat, where it's size is consider-

able, but it suddenly diminishes into a small tube, and is continued of the same size to the stomach: the upper part has been thought to resemble a funnel in it's form, and is distinguished by the term *pharynx*.

The *pharynx* is situate immediately behind the *larynx*, or beginning of the windpipe; but is not, like it, composed of strong cartilage or gristle; it is formed of membrane with a muscular covering, which, by contracting, forces the masticated food down the gullet, or œsophagus. As it is absolutely necessary to breathing, that the larynx should be always open, it is therefore composed of strong cartilage, which cannot easily, or by moderate pressure, be squeezed together and shut up: but this structure is not requisite in the pharynx, as it only requires to be opened occasionally; and then the muscles of the tongue are able to force food or water into it, while it's own muscles continue to force the food or water downward, through the gullet, into the stomach. We have before observed, that, while the food or water is passing over the tongue into the pharynx, it cannot fall into the windpipe, on account of it's being covered by the valve *epiglottis*, which is forced down upon the windpipe by the food, as it passes into the pharynx, so as to shut it completely. If at this instant the animal happen to

cough, that is, throw out air with considerable force from the lungs, the valve is for a moment opened by it, and a little of the food or water is liable to get into the windpipe, whence it is soon expelled by violent coughing.

The œsophagus, having passed along the throat and back part of the chest, penetrates through the diaphragm, and terminates in the stomach.

The œsophagus of a horse has on it's internal surface an insensible membrane, which stretches into the stomach, and lines nearly one half of it's surface: this peculiarity enables us to account in some measure for the inactivity of many violent poisons when given to the horse. In the human œsophagus, this membrane does not exist, the whole of it's internal surface, as well as that of the stomach, being exquisitely sensible.

If two grains of emetic tartar be swallowed by a man, they soon occasion violent vomiting; whereas two hundred times that quantity would produce no sensible effect upon the horse. At the cardiac orifice, or that part where the œsophagus enters the stomach, it's internal coat is so loose as to be thrown into folds, appearing as if it were designed as a valve to prevent the regurgitation of the contents of the stomach. From this cause, as well as from the insensibility of the membrane, with which great part of the stomach

is lined, a horse very rarely vomits; but the opinion, that he is totally incapable of that action, is certainly not true, as I have once seen a horse vomit considerably. This vomiting came on spontaneously, and soon ceased. There is no medicine we are acquainted with capable of producing this action in the horse's stomach; and it's occurrence is very rare, this being the only case I ever saw: but I have been informed of two similar cases.

When we examine the throat, another valvular structure may be observed (which is peculiarly large in the horse), formed by the *epiglottis*, or valve of the windpipe, and a membranous substance that hangs from the back part of the roof of the mouth: this is termed *velum pendulum palati*. These bodies form a very complete valve, which opens downward only, thereby preventing the return of any thing through the *mouth*, either from the lungs or stomach: thus we find, that a horse breathes only through his *nose*, except in coughing, by which the valve is so deranged as to allow the air, so thrown out from the lungs, to pass through the mouth.

In the case of vomiting I have just mentioned, the contents of the stomach were at first observed to pass through the nose; at length, by a violent cough, the valve was deranged, and a considerable

quantity of fluid, mixed with masticated hay and oats, was evacuated by the mouth.

That part of the stomach where the œsophagus terminates is called the cardiac orifice; and that where the intestines begin is termed pylorus.

The intestines or bowels consist of one very long tube, which terminates at the *anus*.

In the horse, the intestines measure nearly thirty yards; but being convoluted, in order to adapt them to the cavity in which they are placed, they have the appearance of several distinct parts.

The internal surface of a horse's intestines is not lined with that insensible membrane which is found in the œsophagus and upper part of the stomach; on the contrary, it is endued with a high degree of sensibilty, and appears to be more susceptible of irritation than that of most other animals. From this irritability of the intestines it is, that many horses have been destroyed by the administration of strong purgatives, and hence arises the necessity of using these medicines with skill and caution.

The intestinal tube is not, throughout it's whole extent, of a uniform size: that part next the stomach is rather small, and continues for about twenty yards nearly of the same diameter: it then becomes very large, but again diminishes before it's termination at the anus.

Anatomists, in describing the intestinal canal, divide it into two parts, *viz.* the small and the large intestines: these are subdivided, the former into *duodenum*, *jejunum*, and *ileum*; the latter into *cæcum*, *colon*, and *rectum*.

All the internal surface of the intestinal tube is covered with a mucous substance, for the purpose of defending it from the action of acrimonious bodies. The various convolutions of the intestines are held together by a membrane called *mesentery*, which not only serves this purpose, but affords also a bed for the *lacteals*, or those small vessels by which the nutricious parts of the food are conveyed to the heart, to be converted into blood. Before we proceed to a particular description of these vessels, it will be necessary to explain the process of nutrition.

When food is taken into the mouth, it is broken down by the teeth, and so mixed with saliva, as to be in a proper state for entering the stomach: it is then, by the united action of the tongue and muscles of the throat, forced into the œsophagus, whence it passes into the stomach. In this organ it undergoes a considerable alteration; for here Nature has provided a curious liquid called *gastric juice*, which has the property of dissolving every thing that is taken into the stomach, and of converting it into a soft pulpy mass, of a uniform

and homogeneous appearance. When the food has been thus altered, the mass is forced by a contraction of the stomach into the *duodenum*, or first part of the intestinal canal. This mass, however, does not consist wholly of nutritive parts, or such as are fit for the formation of blood; and another operation is necessary in order to separate them from such as are useless: this seems to be effected by the bile and pancreatic juice*.

There is a peculiarity, however, in the stomach and intestines of the horse, which it is proper here to describe. The stomach of the horse is small in proportion to his general bulk, and has nearly half of it's inner surface covered with a strong insensible membrane of a white colour. This is the part to which *botts* are generally attached, which explains why these worms so often exist in the stomach without doing any mischief. This insensible membrane is supposed also to enable the stomach to press upon the solid food it may contain, and assist the gastric juice in reducing it to a soft mass: but digestion is far from being perfect in the stomach of the horse, and appears to be completed in the large intestines,

* This opinion has been proved by the experiments of Mr. Astley Cooper, lecturer on anatomy and surgery, and assistant surgeon of St. Thomas's hospital.

cæcum and *colon*. This contrivance seems absolutely necessary in the horse, when we consider the wonderful speed and exertion of which he is capable, and for which Nature appears to have designed him. The ox, the sheep, and other ruminant animals, have four large stomachs, the smallest of which, even in the sheep, is as large as that of the horse. These animals take in a large quantity of food at once, and digest it at their leisure, from which they feel no inconvenience; but the horse, even in a state of nature, is differently employed. Rapidity of motion and strength are necessary to his preservation; and in his domesticated state it is more particularly required. Hence, he is formed with a small stomach, which requires frequent supplies, and is no impediment to his exertions. From this will appear the absurdity of keeping a horse a considerable time without food or water, and then suffering him to take in a large quantity: incurable and even fatal diseases have arisen from this management. In the ox and sheep, digestion is completed in the fourth stomach.

The three first stomachs are connected with each other, and with a groove-like continuation of the œsophagus. The groove is then continued to, and terminates in, the fourth stomach: the

thick prominent lips, which form the edges of this groove, admit of being drawn together, so as to form a complete canal.

The two first stomachs are connected with each other, and with a groove-like continuation of the œsophagus. This groove terminates in the third stomach: the thick prominent lips, which form the margin of this groove, admit of being drawn together, so as to form a complete canal, which then constitutes a direct continuation of the œsophagus into the third stomach. The grass or food, after a slight mastication, is taken into the first stomach, or paunch, from whence it passes, in small portions, into the second stomach, to undergo a farther maceration; it is then returned through the œsophagus into the mouth to be ruminated. When the ruminated food is swallowed, the groove is shut, so that it passes directly into the third stomach, where it is farther prepared for digestion, and then passes into the fourth stomach, in which the process of digestion is completed.

The horse, in a state of nature, is almost constantly feeding: and the food, which he takes in, is retained but a short time in the stomach; digestion seems to be going on nearly through the whole of the intestines, and appears to be chiefly effected in the cæcum, or blind gut, which, in the

horse is remarkably large and capacious. From these curious contrivances, the horse's stomach is never so loaded with food as to hinder the action of the lungs, and impede his velocity. It must be confessed, however, that this does sometimes happen; not from the natural inclination of the animal, but from the folly, negligence, or cruelty of his keeper. I have been the more particular in describing the stomach, as the subject is connected with, and will tend to elucidate, some important diseases.

The bile is formed by the *liver*, a large glandular body, divided into several lobes, and situate immediately behind the diaphragm, to which it is firmly attached. The form of the liver is too well known to require a particular description; we have only to observe, therefore, that the bile, which it secretes, is conveyed by the hepatic duct into the duodenum, within three or four inches of it's origin. In man, and the greater part of quadrupeds, all the bile does not flow immediately into the intestines, there being a small vessel connected with the hepatic duct, which conveys a certain portion into a sac, that is attached to the liver, and called the *gall-bladder*, whence it is occasionally expelled: but this does not exist in the horse.

From what we have just said of the peculiarity

in the digestive organs of the horse, the reason of his having no gall-bladder will readily appear. In man, and many animals, the food is retained a considerable time in the stomach; during which, the bilious fluid, or gall, is not wanted; therefore Nature has provided a reservoir, the gall-bladder; for as the bile is constantly forming by the liver, so would it be as constantly flowing into the first intestine were it not for the gall-bladder, which would have occasioned a great waste of this useful fluid. During the time of digestion, the food is shut up in the stomach, the *pylorus* being closed, and the first intestine empty. The orifice of the duct, which conveys the bile into this intestine, being without it's usual stimulus, the digested food becomes torpid; and, as the action of the whole duct depends upon it's orifice being stimulated, the bile, instead of passing through it, flows into the gall-bladder, where it remains until the digestive process is so far completed, that the food begins to flow from the stomach into the intestine. The biliary duct is then stimulated to action; the gall-bladder partakes of the irritation; and, assisted by the pressure of the distended intestine, contracts upon it's contents, and forces the bile through the duct, into the intestine, where it mingles with the digested food, and causes a separation of the chyle, or nutricious parts.

It must be obvious, that, as the horse is almost constantly feeding, and as digestion is continually going on in his stomach and intestines, that a constant flow of bile is necessary, and therefore that a gall-bladder would be useless, perhaps injurious.

The *pancreas* is also a glandular body, and secretes a fluid somewhat resembling saliva, which is conveyed by the pancreatic duct into the duodenum, at the same place where the hepatic duct enters. When these fluids (the bile and pancreatic juice) are poured into the intestine, they mingle with the mass of digested food, which has been expelled from the stomach, and separate from it all those essential parts, which are fit to be converted into blood: this process is termed chylification. We have before observed, when describing the mesentery, or that membrane by which the intestines are held together, that an immense number of small delicate vessels are spread over it's surface, named *lacteals*, from their containing a fluid, which, in it's appearance, resembles milk. This fluid consists, in fact, of the essential parts of the food proceeding to the heart, in order to be converted into blood. All the lacteals open into the intestines, and cover the whole of their internal surface, where they are always disposed to absorb the nutritious parts of the food in it's passage

through the intestinal canal. Some physiologists suppose, that the mouths of the lacteals have the power of *selecting* such parts of the food as are fit to be converted into blood, that no previous separation takes place, and that the bile serves only as a natural purgative, constantly stimulating the intestines, thereby keeping up a small degree of motion in them, and promoting the expulsion of the feculent parts of the food.

It will probably be asked, how it is that the mass of food passes through the intestines, since they are so convoluted that it cannot possibly be effected by the power of gravity? but, if we examine their structure, this phenomenon may be readily explained. The intestines are composed, in great measure, of muscular fibres, some of which run in a *circular*, and others in a *longitudinal* direction: when the *circular* fibres contract, the *diameter* of the canal is diminished; and when the *longitudinal* fibres are in action, it becomes *shorter*; and, by the combined action of these fibres, the food is gradually propelled through the whole length of the intestinal canal. The motion thus excited may be distinctly seen in an animal recently killed, and in some it continues a considerable time after death. The intestine, however, is not entirely composed of muscular fibres; it's internal surface is lined with a

fine nervous and vascular membrane, which is endued with exquisite sensibility, and has the power of forming on it's surface a mucous substance, which serves to protect it from the action of acrimonious bodies. Beside the muscular and nervous coat, there is another, which enters into the composition of the intestine: this is a thin membrane, called *peritonæum*. The peritonæum not only forms the third and external coat, it likewise envelops all the organs contained in the abdomen, forming in the external coat, and is closely connected with them, and is then so reflected as to form a kind of sac, in which they are all enclosed. Thus are the intestines composed of three coats, which are closely in contact with each other; the peritoneal, the muscular, and the nervous coat.

We have yet to describe the course of the *lacteals*, or those vessels which take up the chyle, or nutricious parts of the food. We have before observed, that they are spread upon the mesentery, whence they pass on towards the spine, becoming larger and less numerous in their progress; at length they terminate in a large tube, which runs along the spine, and is named the *thoracic duct*: this pours it's contents into a large vein near the heart, to which part it is immediately after conveyed, and converted into blood.

The *kidneys* are two glandular bodies, situate

within the loins; their office is to separate urine from the blood. The urine, thus separated, is conveyed by two tubes of considerable length, termed *ureters*, into the *bladder*, which is composed of three coats like those of the intestine; and when it has received a sufficient quantity of urine to stimulate it's muscular fibres into action, it contracts upon the urine, and forces it out through the urethra, or urinary canal. We have now finished our sketch of the abdominal and thoracic viscera; which has been given with a view to render the description we are about to give of internal diseases more intelligible to those readers who are unacquainted with anatomy, than it would otherwise have been.

CHAPTER II.

Inflammation.

IT was supposed by the celebrated Boërhaave, and other physiologists of his time, that inflammation depended on a viscidity of the blood, which rendered it unfit for circulating in the finer vessels; and that hence arose obstructions, and those appearances by which the disease is characterized. This opinion, however, has obtained very little credit with modern physiologists, and is now universally rejected; it having been proved, that blood drawn from an animal labouring under inflammation is *more fluid*, and *remains fluid longer*, than that which is taken from the same animal when in health.

The most prevailing opinion at present respecting inflammation is, I believe, that it consists in an increased action of the heart and arteries, when *general;* whereby the blood circulates with unusual velocity, throwing the whole system into derangement; and when *local*, or existing in a particular part*, the increased action is in

* In local inflammation, though the larger arteries of the part have their action increased, it is probable that their

like manner confined to the vessels of that part.

When a part is inflamed, there arises in it an unusual degree of heat, generally attended with considerable tension and swelling; the sensibility and irritability are always increased, and produced by it in parts where it did not before exist. In bones and tendons, for example, scarcely any *sensibility* can be perceived when they are in a state of health; but, when *inflamed*, it is roused to an

small branches, which, from their minute size, are termed capillary arteries, are in a state of debility, and distended with blood, which they are incapable of getting rid of; the larger arteries, acting with unusual strength and quickness, will of course force a greater quantity of blood than usual into these delicate vessels, so as to stretch them beyond their tone, and render them incapable of contracting upon their contents. This accounts for swelling, heat, and redness of an inflamed part, and shows the utility of bleeding by leeches on such occasions; as these worms attack only the capillary arteries, drawing off the superfluous blood, and enabling them to recover their strength, and contract as before. This doctrine points out also the efficacy of general bleeding, and purging, in local inflammation, which tend to moderate the action of the larger arteries, and cause them to pour no more blood into their minute branches than they are capable of forcing into their terminations—the veins. We thought it proper to say thus much of the *theory* of inflammation, as it may lead to a better practice than is commonly adopted in treating the inflammatory complaints of horses.

alarming degree, and the most dangerous consequences may ensue from it.

Inflammation has four modes of termination: the first is termed *resolution*; that is, when the disease after going a certain length, gradually disappears again: the second *suppuration*; that is, when matter is formed, or an abscess produced: the third is named *effusion*, which implies an extravasation either of blood, coagulable lymph, or serum: and the fourth, *gangrene*, or mortification, by which is meant the death of the inflamed part.

Inflammation of the external parts is generally occasioned by some mechanical injury, such as wounds, bruises, &c.: sometimes, however, it arises from *internal* inflammation, or symptomatic fever, and is then to be considered as an effort of nature to cure the internal disease. Thus we sometimes find in fevers abscesses taking place on the surface of the body, whereby the fever is considerably diminished, and, in general, terminates favourably.

Inflammation is often produced by plethora, or redundancy of blood in the body; in which case it is sometimes *general*, the whole arterial system having it's action increased: this also may be considered as an effort of nature to get rid of the superfluous blood, and in such cases she must be

assisted by copious bleeding. It more commonly happens, however, that the redundant blood is determined to some particular part, occasioning *local* inflammation; very frequently falling upon some of the internal organs, and the lungs are peculiarly liable to suffer: from this source, indeed, their most dangerous fevers arise. The eyes, also, are very apt to suffer when a horse becomes plethoric, to which cause, I believe, almost all the diseases of that delicate organ may be attributed.

In the treatment of external inflammation, we should endeavour to bring it to the most favourable termination, that is, *resolution;* unless when it arises from an effort of nature to cure some *internal* disease;—it is then desirable to bring it speedily to suppuration. The remedies to be employed for resolving inflammation are, local or general bleeding (see Index, *Bleeding*), purgatives, fomentations, poultices, or the saturnine lotion: other cold applications have been used with success, such as sal ammoniac dissolved in vinegar, goulard, &c.

When inflammation takes place in tendinous parts or joints, the saturnine poultice has been found an useful remedy, and in the latter case I have often found blisters extremely efficacious. As in these cases the inflammation generally proves more troublesome, and as the pain which

it occasions is often so considerable as to produce symptomatic fever, it becomes necessary to employ, without loss of time, the most prompt and efficacious means for it's reduction *. With this view, we excite *artificial* inflammation in the contiguous skin and cellular membrane, which are parts of far less importance in the animal economy than joints or tendons, and capable of bearing a considerable degree of inflammation, without much inconvenience to the animal: this is done by means of rowels and blisters, and the inflammation, thus excited, will tend, in a considerable degree, to diminish that which is going on in the more important part. Should we fail in our endeavours to *resolve* inflammation, it will probably terminate in *suppuration;* and when it appears that the disease does not abate by the use of the remedies we have recommended, an assiduous application of fomentations and poultices will expedite the suppurative process, and afford great relief to the animal. When the inflammation, or rather the swelling which it occasions, arrives at this state, it is termed an *abscess*, in which, when the suppuration is complete, and it contains *matter*, a fluctuation may be felt, upon it's being pressed by two fingers alternately. This point

* See *Wounds of Joints*, Appendix.

being ascertained, an opening is to be made with a lancet or knife, in such a way that the matter may be completely evacuated, and a future accumulation prevented: it is then to be dressed with digestive liniment or ointment. Should the wound appear indisposed to heal when this treatment has been pursued for a short time, discharging a thin offensive matter, and wanting that red appearance by which the healing process is indicated, the detergent lotion will soon remove these unfavourable appearances; the *discharge* will become whiter and thicker, and red granulations of new flesh will sprout up. Should these granulations, however, become luxuriant, constituting what is commonly termed *proud flesh*, they are to be kept down by means of the caustic powder. It sometimes happens, that when a part is inflamed and swollen, instead of going on to suppuration, it degenerates into a hard and almost insensible tumour: this depends on the inflammation having terminated in *effusion* of coagulable lymph, and is to be removed by stimulating embrocations or blisters.

When inflammation runs very high, as is sometimes the case in violent bruises, or deep and extensive wounds of the lacerated kind, it may terminate in *gangrene*, or mortification, which is generally attended with danger: in this case, the

matter discharged, instead of being white and thick, consists of a dark-coloured fluid, of a peculiar offensive smell; the constitution is generally affected, the pulse becoming quick, weak, and sometimes irregular; the appetite goes off; and there is a great degree of debility*.

When any of the *internal parts* are inflamed, a *fever* is generally produced, the violence of which will depend upon the importance of the inflamed organ, as well as upon the extent and degree of the inflammation; some of the internal parts being more essential to life than others, and, when inflamed, occasioning of course greater derangement in the system. The only *favourable* termination, to which internal inflammation can be brought, is resolution; and the most vigorous measures should be adopted in order to effect it. The most important remedy in these cases is *copious bleeding*, and the earlier it is employed the more effectual will it prove: the next remedy is *external inflammation*, artificially excited by means of rowels and blisters. The fever powder and occasional clysters are of considerable service.

* See *Lacerated and Contused Wounds*, Appendix.

CHAPTER III.

Fever.

THE fevers of horses bear very little analogy to those of the human body, and require a different treatment. Writers on farriery have described a great variety of fevers, but their observations appear to have been drawn from the works of medical authors, and their reasoning seems entirely analogical. I can distinguish only two kinds of fever, the one, an idiopathic, or original disease, and therefore properly termed *simple*; the other, dependent on internal inflammation, and very justly denominated *symptomatic* fever. For example, if the lungs, bowels, or stomach, were inflamed, the whole system would be thrown into disorder, and a symptomatic fever produced: but if a collapse of the perspiring vessels happen to take place, the blood will accumulate in the interior parts of the body; and though inflammation is not produced by it, the unequal distribution of the blood alone will occasion that derangement in the system which constitutes the simple fever*. The simple fever does not occur so fre-

* Fever is often preceded, or rather commences, with shivering; from which circumstance it seems reasonable to infer, that an interruption of the functions of the skin is either a *cause* of fever, or materially connected with it.

quently as the symptomatic, nor is it by any means so formidable in it's appearance; yet it is necessary to give it the earliest attention, for unless nature receives timely assistance, she will be sometimes unable to get rid of the load which oppresses her; and the blood will accumulate in the interior part of the body, until inflammation in some of the viscera is produced, and a dangerous disease established. The following are the symptoms of simple fever:—shivering, succeeded by loss of appetite, dejected appearance, quick pulse, hot mouth, and some degree of debility: the horse is generally costive, and voids his urine with difficulty. The disease is often accompanied with quickness of breathing, and, in a few cases, with pain in the bowels, or symptoms of colic.

As soon as a horse is attacked by this disease, let him be bled freely; and if costiveness be one of the symptoms, give a pint of castor oil, or the oil of olives; and let a clyster of warm water-gruel be injected*. After the operation of the

* I have lately found the following drink a very useful laxative on these occasions:—

Take of Barbadoes aloes powdered . . .	3 drams.
Prepared kali	1½ dram.
Castor oil	4 oz. to 6 oz.
Simple mint water and pure water, of each,	4 oz.

Mix for one dose.

laxative, the fever powder is to be given once in twelve hours, and continued until it's diuretic effect becomes considerable. Warm water and mashes are to be frequently offered in small quantities; warm clothing, frequent hand-rubbing, and a liberal allowance of litter, are also necessary; and when the fever runs high, it is advisable to insert rowels about the chest and belly, in order to prevent internal inflammation from taking place. When the disease appears to be going off, the horse looking more lively, and the appetite returning, let him be led out for a short time in some warm situation, and give now and then a malt mash for the purpose of recovering his strength.

FEVER-POWDER.

N° 1.

Powdered nitre	1 oz.
Camphor and tartarised antimony, of each	2 dr.

Mix for one dose.

N° 2.

Powdered nitre	1 oz.
Unwashed calx of antimony . . .	2 dr.

Mix for one dose.

N° 8.

Antimonial powder	3 dr.
Camphor	1 dr.

Mix for one dose.

The additions made by the author to this subject may be found in the Appendix.

Symptomatic Fever.

THE symptomatic fever is generally occasioned by high feeding, close stables, and a want of proper exercise: sometimes, however, a sudden transition from a cold to a hot temperature is evidently the cause of it. In this respect it is different from the simple fever, which, as before observed, sometimes arises from exposing a horse suddenly to cold air, when he has been accustomed to a warm stable. Horses that are taken from camp or grass, and put suddenly into warm stables, are extremely liable to those internal inflammations on which symptomatic fever depends, and many thousands have fallen victims to this kind of treatment.

When a fever is symptomatic, it is not perceived by shivering, nor is it so sudden in it's attack as the simple fever*: but when it is not subdued by an early application of remedies, the symptoms gradually increase in violence, until they present a very formidable appearance. When the disease, however, is occasioned by great and long continued exertion, it generally comes on suddenly; and the complaint has a very dangerous appearance in it's earliest stage.

The symptomatic fever has many symptoms in common with the simple fever, which are, loss of appetite, quick pulse, dejected appearance, hot mouth, and debility; and if to these be joined difficulty of breathing, and quick working of the flanks, with coldness of the legs and ears, we may conclude that an inflammation of the lungs is the cause of the fever. If the horse hang down his head in the manger, or lean back upon his collar with a strong appearance of being drowsy, the eyes appearing watery and inflamed, it is probable that the fever depends upon an accumulation of blood in the vessels of the brain, and that the staggers are approaching: in this case, however, the

* Fever that commences with shivering, has often terminated in a fatal inflammation of the lungs, when neglected or improperly treated.

pulse is not always quickened; sometimes, indeed, I have found it unusually slow*.

When the symptoms of fever are joined with a yellowness of the eyes and mouth, an inflammation of the liver is indicated. Should an inflammation of the bowels be the cause, the horse is violently griped. An inflammation of the kidneys will also produce fever, and is distinguished by a suppression of urine and an inability to bear pressure upon the loins. When inflammation of the bladder is the cause, the horse is frequently staling, voiding only very small quantities of urine, and that with considerable pain. Extensive wounds, and particularly those of joints, will also produce symptomatic fever. Sometimes several of the internal parts are inflamed at the same instant; and indeed when inflammation has existed for a considerable length of time, it is seldom confined to the organ in which it originated: the disease spreads to other viscera; and when more than one organ is inflamed, the symptoms will generally be complicated: still, however, the essential remedies are the same, that is to say, copious and early bleeding, with rowels, &c.

Having now given a general description of

* Nearly the same symptoms are produced, when the stomach is oppressed or loaded, and incapable of digesting it's contents. See *Staggers and Diseases of the Stomach*, Appendix.

symptomatic fever, I shall proceed to treat of those cases separately to which above I have briefly alluded.

Inflammation of the Lungs.

This is a very dangerous disease, and one to which horses are exceedingly liable: the frequency of it's occurrence is occasioned by improper management, and not by any natural defect in the constitution of the animal: it may therefore be prevented by proper attention in the groom. Medical writers make a distinction between inflammation of the lungs and that of the pleura, or the membrane which covers those organs, calling the former *peripneumony*, and the latter *pleurisy*: this distinction, however, is not necessary in veterinary nosology, since we never find these parts affected separately in the horse*. The progress of this disease is often very rapid; and unless proper remedies are employed at an early period, it frequently terminates fatally.

* On examining the bodies of horses that die of this disease, we always find the lungs diseased as well as the pleura: it is probable, however, that the inflammation generally begins in the pleura, and spreads gradually to the lungs.

It's approach is indicated by the following symptoms:—loss of appetite, an appearance of dulness and disinclination to motion, unusual quickness in the motion of the flanks, hot mouth, and sometimes a cough. If the disease, by adopting an inert or improper mode of treatment, be suffered to proceed, all these symptoms will increase; respiration will become extremely quick and laborious, the pulse more frequent, and at the same time weak. A striking appearance of uneasiness and anxiety may be observed in the animal's countenance: the nostrils expanded, the eyes fixed, and the head inclining downward; the legs and ears become cold, and the debility is so considerable, that he is incapable of moving in the stall without great difficulty; he never lies down, unless so much weakened as to be incapable of standing. The disease, however, is not always so rapid in it's progress as we have here described it, and not unfrequently a considerable remission may be observed, which is occasioned probably by an effusion of serum or water having taken place in the chest; and this remission is sometimes so conspicuous, that we are led to give a favourable prognosis, the horse beginning to feed again, and the pulse becoming less frequent. But this flattering appearance often proves fallacious; the disease soon returns with accumulated

force, and puts a period to the animal's life. I have seen cases, where bleeding has not been performed with sufficient freedom, in which the inflammation, being checked in some degree, at length terminated in a plentiful effusion of water in the chest: when this happens, the horse returns to his food, looks more lively, and in short the symptoms of fever in a great measure disappear. There remains, notwithstanding, an unusual quickness in respiration, generally accompanied with a cough; the hind legs swell, and the horse very rarely lies down; a rough unhealthy appearance may also be observed in the coat, the skin feeling as if it stuck to the ribs; and the animal continues in a state of weakness. After some time, the inflammation generally returns, and then speedily ends in death. It sometimes happens, that the inflammation terminates in suppuration: in this case also the fever is in some degree lessened, and the horse begins to feed a little; but he still remains in a very feeble state, has a weak cough, and discharges fetid matter from his nostrils; at length the disease again becomes violent, and soon puts a period to his sufferings.

The first thing to be done, when this dangerous disease is observed, is, *to bleed copiously*, even till the horse begins to faint from loss of blood.

I have seen six quarts drawn at one operation, and with the best effect: sometimes indeed the disease will be completely subdued by thus bleeding freely at it's commencement. Should the horse be costive, or even if the bowels be in a natural state, it will be advisable to give a pint of castor oil, and inject a clyster of water-gruel. It will then be necessary, in order to divert the inflammation from this important organ, to insert rowels about the chest and belly, and to blister the sides extensively. Let the legs be kept warm by almost constant hand-rubbing; and warm clothing must never be omitted. Nothing is more pernicious in this complaint than compelling the animal to breathe the impure air and stimulating vapours of a close stable: this is indeed so obvious a truth, that it would be unnecessary to mention it, were it not a constant practice with grooms, on this occasion, to stop every crevice they can find, by which pure air might be admitted, and the noxious exhalations suffered to escape.

If the disease do not appear to abate in twelve hours after the bleeding, particularly if it have become more violent, let the operation be repeated, and with the same freedom as at first. We need not be apprehensive, at this early period of the disease, of any dangerous debility ensuing

from the loss of so much blood: on the contrary, it will tend to reestablish strength by subduing the inflammation, on which the fever depends. It has rarely been found necessary to bleed several times, and that very plentifully; but it must be recollected, that when the fever has existed for some time, and has nearly exhausted the horse's strength, bleeding seldom does good, and in some instances, I believe, has been the means of hastening death. When suppuration takes place in the lungs, though there is little probability of saving the animal, his life may be prolonged by giving frequently good water-gruel and infusion of malt. Opium, salt of hartshorn, and other cordials, will also be of service. I have generally given the following ball on these occasions; and though I have never seen a horse recover after suppuration had taken place in the lungs, yet these remedies have certainly afforded considerable relief.

Salt of hartshorn	1½ dr.
Opium	1 dr.
Powdered aniseeds	½ oz.

Sirup enough to form a ball for one dose.

When the mode of treatment here recommended is adopted before the disease has gained

much ground, it will generally succeed completely. Considerable weakness will of course remain after the fever has been removed, but this also will gradually go off, if proper attention be paid to the horse's diet and exercise. When the appetite begins to return, it will be advisable to give small quantities of oats that have been steeped in boiling water; good water-gruel will also be found serviceable in recruiting his strength; the sweetest parts should be selected from the hay, and given frequently in small quantities. Malt is an excellent restorative on these occasions, but must not be given too freely. When the weather is favourable, let the horse be led out for a short time every day; or if a small paddock can be procured, and the season of the year will admit of it, he may be turned out for a few hours every day, while the sun shines, taking care that he is well clothed during that time: by those means he will gradually recover his original strength.

Inflammation of the Bowels.

This disease is not so frequent as the preceding, though equally dangerous, and generally more

rapid in it's progress. Inflammation may attack either the peritonæal coat of the intestine, or that delicate membrane which forms the internal or villous coat. In the former case the disease will be attended with costiveness, but in the latter a violent purging is the most conspicuous symptom; but which ever of these coats is first attacked, the inflammation, in a short time, generally spreads to the other.

The peritonæal inflammation begins with an appearance of dullness and uneasiness in the horse; the appetite is considerably diminished, or is entirely lost, and the pulse becomes more frequent; the pain and febrile symptoms gradually increase; he is continually pawing with his fore feet, and frequently endeavours to kick his belly; he lies down and suddenly rises again, and looks round to his flanks, strongly expressing by his countenance the violence of the pain he suffers; his urine is commonly high coloured, and in small quantity, and sometimes voided with considerable pain; he is generally costive, and the pulse remarkably small and quick; the legs and ears become cold, and respiration is very much disturbed, and sometimes, from the violence of the pain and the animal's struggling, profuse perspiration breaks out; at length, mortification takes place, and is quickly succeeded by death. Some-

times the progress of this disease is remarkably rapid: in one instance, I have seen a complete mortification take place in the course of twelve hours, and that very extensively.

When only the *internal* coat of the intestines is inflamed, there is generally a violent purging, accompanied with febrile symptoms; these, however, are seldom so considerable as in peritonæal inflammation, nor does the animal appear to be in so much pain. This disease is commonly produced by the improper use of physic, or by neglecting a horse during the operation of a purgative.

In the treatment of peritonæal inflammation, *early and copious bleeding is the most important remedy.* The efficacy of artificial inflammation on the surface of the body is remarkably conspicuous in this disease; and I have seen even the actual cautery applied to the skin of the abdomen with manifest advantage. As a substitute for this severe remedy, I would recommend covering the back with fresh sheep-skins, which will soon excite, and keep up for a considerable time, a copious perspiration on the part: the whole of the abdomen or belly should have the mustard embrocation assiduously rubbed upon it, the stimulating effects of which may be promoted by covering the part afterward with

sheep-skins, or warm clothing. Rowels also may be inserted about the chest and belly, putting into them blistering ointment instead of turpentine, or the common digestive, which is usually employed for the purpose. Should the horse be costive, which, as we before observed, is almost always the case, give a pint or twenty ounces of castor oil, and let clysters of fine water-gruel be injected. He should be allowed to drink plentifully of warm infusion of linseed, or warm water alone; while hand-rubbing to the legs, with a liberal allowance of litter, should not be forgotten. If the disease do not abate in six hours after the bleeding, the operation must be repeated; and, if the costiveness be not removed ten or twelve hours after the oil has been taken, give another dose, and repeat the clyster. If the disease continue, and increase in violence, after all these remedies have been properly applied, there will be but little probability of recovery: particularly if the pulse have become so quick, weak, and fluttering, as to be scarcely felt; or if there appear to be a remission or cessation of pain, or the horse become delirious. These are always fatal symptoms, denoting, that mortification is taking place, which is the certain harbinger of death; but should the pain continue after the

above remedies have been fairly tried, the anodyne clyster may be injected.

With respect to the causes of peritonæal inflammation, the most usual appear to be high feeding and want of exercise: it is not unfrequently occasioned, however, by putting a horse suddenly into warm stables when taken from camp or grass. The fatal consequences of this management were often experienced in the army, I believe, though a different cause was assigned before the veterinary art had made sufficient progress to point out it's impropriety and danger.

In some instances, the disease appears to have been produced by the distension which the intestines have suffered in flatulent colic or gripes, where this complaint has been neglected or improperly treated, or where the *spasm* has been so violent as to resist the operation of every remedy, in which case it's progress is remarkably rapid.

An inflammation of the villous or internal coat of the intestine, we have before observed, is commonly occasioned by giving too strong physic, or by inattention during it's operation, and is generally accompanied with profuse purging: in this case, a different treatment is required from what we have recommended for peritoneal in-

flammation, and bleeding must not be employed, unless the pulse is much accelerated and the febrile symptoms considerable: the oil also must be omitted. Here the mustard embrocation, and sheep-skins to the back and belly, are eminently useful*.

It is of consequence to make the horse drink freely of fine water gruel, or linseed tea, which, if he refuse to drink, must be given with a horn. If the disease continue, notwithstanding these remedies have been carefully employed, let the anodyne clyster be injected; and if this fail, give the anodyne or the restringent draught. It sometimes happens, when a horse has taken physic, that gripes and violent sickness occur before the purging takes place: in this case, by means of a clyster, a plentiful exhibition of thin water-gruel, and exercise, we shall produce an evacuation, and relieve the animal. Peritonæal inflammation has sometimes been mistaken for flatulent colic, or gripes, but their appearances are very different, and they may easily be distinguished by referring

* When the bowels are inflamed from this cause, the purging generally ceases when the inflammation becomes considerable, and then mortification and death quickly succeed.

I have found considerable advantage, in cases of super-purgation, from the preparation termed arrow-root; which appears to be nothing more than a pure kind of starch.

to the annexed table, in which their symptoms are contrasted.

RESTRINGENT DRAUGHT.

Opium	from 2 to 1 dr.
Prepared chalk	1 oz.
Compound powder of tragacanth . .	1 oz.
Mint water	1 pint.

ANODYNE DRAUGHT.

Opium	1 dr. to 1½ dr.
Water-gruel	1 quart.

Mix for one dose.

MUSTARD EMBROCATION.

Camphor	1 oz.
Oil of turpentine and water of pure ammonia, each	2 oz.
Flour of mustard	8 oz.

To be made into a thin paste, with water, and rubbed for a considerable time on the part.

ANODYNE CLYSTER.

Opium	3 dr. to ½ oz.
Water-gruel	3 pints*.

Mix for one Injection.

* The opium, as it is imported and sold in the shops, contains generally a good deal of extraneous matter: if, therefore, the purified opium be employed, some allowance must be made in the dose.

A TABLE,

SHOWING THE DIFFERENCE BETWEEN

FLATULENT COLIC, OR GRIPES,

AND

INFLAMMATION OF THE BOWELS*.

Symptoms of Inflammation of the Bowels.	*Symptoms of Flatulent Colic.*
1. Pulse very quick and small.	1. Pulse natural, tho' sometimes a little quickened.
2. Lies down and suddenly rises again, *seldom* rolling upon his back.	2. Lies down and rolls upon his back.
3. Legs and ears generally cold.	3. Legs and ears generally warm.
4. In general, attacks gradually, is commonly preceded, and	4. Attacks suddenly, is never preceded, and seldom accompanied

* The additions to this subject will be found in the Appendix, under the head *Diseases of the Bowels*, which includes both the inflammatory and flatulent colic, and some other disorders.

always accompanied by symptoms of fever.	by any symptoms of fever.
5. No intermissions can be observed.	5. There are frequently short intermissions.

Inflammation of the Stomach.

THE stomach, like the intestines, may be inflamed either on it's *external* or *internal* surface. When the external coat is the seat of the disease, the symptoms are nearly the same as those by which peritonæal inflammation of the intestines is indicated, and the same treatment is required; the only difference observable in the symptoms is, that in this case the pain seems to be more acute and distressing than in the other: the same difference may be observed between the large and small intestines, the latter being possessed of more sensibility than the former.

When inflammation attacks the peritonæal coat of the stomach, it very soon diffuses itself to the small intestines and neighbouring viscera; or, if the small intestines be it's original seat, it frequently spreads to the stomach, and sometimes to the large intestines also. In examining horses, therefore, that have died of these diseases, we sel-

dom find the inflammation confined to one particular organ; it more commonly happens, indeed, that the whole of the abdominal viscera will exhibit morbid appearances, but in different degrees; those most contiguous to the part first diseased having suffered considerably, while such as are more remote from it are perhaps scarcely altered; for we can generally distinguish the original seat of the inflammation.

An inflammation of the *internal* or *villous* coat of the stomach is not a very common disease, and is generally occasioned either by poisons or strong medicines that have been swallowed, or by that species of worms termed *bots*. When poisons, or strong medicines incautiously given, are the cause, it will of course come on suddenly; the pulse will be extremely quick, and so weak that it can scarcely be felt; the extremities will become cold, and there will be a peculiar dejected appearance in the animal's countenance; respiration will be disturbed: sometimes there will be a cough, and always a high degree of debility. The treatment of this disease consists in giving oily or mucilaginous liquids freely, such as decoction of linseed, gum arabic dissolved in water, &c.; and, at the same time, medicines that are capable of decomposing or destroying the poison; for which purpose I believe the sulphurated kali is useful in

doses of half an ounce, provided the poison be either mercurial or arsenical. Clysters are to be injected; and, if the disease be accompanied with purging, they should be composed of strong linseed decoction or water-gruel. I saw five cases of inflamed stomach at one time, all occasioned by poison. The above treatment was pursued, and four out of the five perfectly recovered.

That inflammation, which bots produce in the stomach, is indicated by symptoms somewhat different from those just described: indeed, it may more properly be considered as ulceration of the stomach, than inflammation, since, upon examining horses that have died of this complaint, I have always found ulcers of considerable size. This disease generally comes on gradually: the horse becomes hide-bound, has a rough unhealthy coat, gradually loses flesh and strength, though he continues to feed well, and has a frequent and troublesome cough. The disease perhaps will continue in this state for some time, and no serious consequences are apprehended; it's cause and seat are seldom suspected; medicines are given to remove the cough, with common alteratives for the purpose of improving his condition.

In some instances these insects are spontaneously detached, and expelled through the intestines: in such cases, if the stomach have not been

much hurt by them, it will gradually recover, and the horse be restored to his original strength and condition. When this does not occur, these worms produce so much mischief in the stomach, as to throw the whole system into disorder. The lungs are particularly liable to sympathise with the stomach in this case, and frequently become inflamed in consequence. The inflammation thus produced in the lungs is extremely obstinate; and though it may be checked in some degree by bleeding, and the other remedies we have recommended for that disease, yet, as the cause cannot often be removed, it generally, I believe, terminates fatally. This symptomatic inflammation of the lungs may be distinguished from the idiopathic, or original, by the following criterion:—It is generally preceded by an unhealthy appearance in the coat, and a troublesome cough; the animal seldom bears bleeding well, the loss of any considerable quantity causing a rapid diminution of strength; whereas, in the idiopathic inflammation of the lungs, the strength of the pulse, as well as the whole system, is often increased by bleeding. (See *Worms, Bots, and Diseases of the Stomach.*)

Inflammation of the Kidneys.

THIS disease does not occur very frequently, and is generally occasioned, I believe, by an immoderate use of strong diuretic medicines. At the first attack of this complaint the horse constantly stands as if he wanted to stale, sometimes voiding a small quantity of high-coloured or bloody urine. When the inflammation becomes more considerable, a suppression of urine and fever generally take place: if the loins be pressed upon, the animal shrinks from the touch, and appears to feel great pain. In the first place bleed freely, then give a pint or twenty ounces of castor oil, throw up clysters of warm water, and cover the loins with sheep-skins, having previously rubbed upon them the mustard embrocation. Should these remedies fail of procuring relief, repeat the bleeding; and should not the oil have operated sufficiently, let another dose be given. All diuretic medicines are to be carefully avoided. (See *Bloody Urine*, *Suppression of Urine*, Appendix.)

Inflammation of the Bladder.

WHEN the bladder is much inflamed, it's irritability is so increased, that it becomes incapable of

containing any urine, contracting upon every drop almost that passes into it from the kidneys. In this complaint, then, the horse is attempting almost constantly to stale, but voids only a few drops of urine, and that with considerable pain: it is generally attended with quick pulse, and other symptoms of fever. Nothing is more beneficial in this disease than causing the horse to drink largely of linseed decoction, or any other mucilaginous liquid, and throwing up frequently clysters of the same: bleeding, and a dose of castor oil, are likewise highly necessary. After the operation of the oil, let the following ball be given every sixth hour. Should no relief be obtained by these means, the horse continuing to void his urine frequently, in small quantities, and with pain, give one dram of opium twice a day, and omit the ball. Costiveness tends very much to aggravate this complaint; and, whenever it occurs, let a clyster be injected, and a dose of oil given.

THE BALL.

Powdered nitre	½ oz.
Camphor	1 dr.
Liquorice powder	3 dr.

Honey sufficient to form a ball for one dose.

(See *Diabetes*, *Bloody Urine*, *Stoppage of Urine*, *Stone*.)

Inflammation of the Liver.

This disease is indicated by a yellowness of the eyes and mouth, red or dark-coloured urine, great weakness, and fever, generally accompanied with diarrhœa or purging, and sometimes with costiveness; the horse has a very languid appearance, and is almost constantly lying down. Sometimes the progress of this complaint is very rapid, speedily terminating in death: at others it proceeds more slowly, the animal lingering for a considerable time. In this case it not unfrequently terminates in dropsy, or inflammation of the bowels. A case I recently met with terminated in this way. It is often complicated with other internal diseases, causing some variety in the symptoms.

Bleeding can be employed with safety only at the commencement of this disease: afterward it generally does harm, by inducing a dangerous degree of debility. The sides should be blistered; and, if there be no purging, the ball N° 1 given, once in twelve hours, until it occasions moderate purging; but, if the bowels be already in a lax state, the ball N° 2 or 3 will be better adapted to the complaint, and is to be given in the same way.

THE BALL.

N° 1.

Calomel	½ dr.
Barbadoes aloes	1 dr.
Castile soap	2 dr.
Rhubarb	½ oz.

Sirup enough to form a ball for one dose.

N° 2.

Opium	½ dr. to 1 dr.
Calomel	1 dr.
Castile soap	2 dr.

Sirup enough to form a ball for one dose.

N° 3.

Opium and calomel, of each	1 dr.
Emetic tartar	2 dr.
Liquorice powder	3 dr.

Sirup enough to form a ball for one dose.

It is necessary to promote the horse's strength, by a diet that is nutritious and easy of digestion, such as malt, arrow root, carrots, &c., indulging him in any kind of green food which he shows a particular inclination for; taking care, however, not to give him too much at once. Beside the above medicines, those of a tonic kind should be

given, such as bark, steel, &c. (See *Tonics* in the Veterinary Materia Medica.)

Strangles.

This disease generally attacks young horses between the third and fifth year of their age, and consists in an inflammation of the membrane of the throat and nose, and swelling of the glands under the throat, accompanied with cough, and a discharge of white thick matter from the nostrils: sometimes there are likewise a soreness of the throat, and difficulty in swallowing. The inflamed glands commonly suppurate in a short time, and burst, discharging a large quantity of matter. When this has taken place, the cough and other symptoms generally go off, the sore gradually heals, and the horse speedily recovers. In some cases the strangles assume a more formidable appearance, are attended with a considerable degree of fever, and the throat is sometimes so much inflamed, that the horse is incapable of swallowing either food or water; but, however violent the attack may be, I have always found that, by adopting a proper mode of treatment, every unpleasant symptom may be easily

removed, and a speedy recovery effected. It is not a very uncommon circumstance for the strangles to attack young horses while at grass; and then they are frequently not perceived until nature has nearly effected a cure.

The approach of strangles may be known by a dulness of countenance, watery eyes, cough, and a slight degree of swelling in the glands under the jaw. As soon as they are discovered, let the hair be carefully clipped off from the inflamed glands and contiguous parts of the throat; let a large poultice be then applied to the throat, in doing which it is necessary to take care that it is so secured as to be constantly in contact with the throat; for unless this is attended to, the poultice will be but of little service. I have generally found, that by rubbing a small quantity of some stimulating ointment on the inflamed glands, previous to the application of each poultice, suppuration has been considerably promoted: for this purpose the following formula will be found useful:

Camphor	2 dr.
Oil of origanum . . .	1 dr.
Spermaceti ointment .	2 oz.

Mix.

When matter is completely formed in the

glands, which may be known by the tumour becoming larger, and by the skin feeling tense and somewhat elastic, an opening should be made with a lancet and it's contents evacuated: this plan is certainly preferable to that of waiting until it bursts spontaneously, as the animal is instantly relieved by it, and the cure more speedily effected. To evacuate the matter perfectly, it is necessary to use moderate pressure with the fingers; and when this has been done, let a piece of lint, dipped in digestive liniment, be inserted, for the purpose of keeping the lips of the wound open, and allowing the matter to escape freely: the poultice is to be continued until the swelling is perfectly reduced. When strangles attack the internal parts of the throat, so as to render the horse incapable of swallowing, and particularly if the external swelling be not considerable, it will be advisable to apply a blister, and keep the bowels open with clysters. It is very necessary, in every case of strangles, to steam the head well; that is, to put hot bran mashes into the manger frequently, so that the horse may inhale the vapours.

It is of consequence to distinguish cases of incipient strangles from common colds. In the latter *bleeding* is a useful remedy; but in the former I believe it does much harm, by interrupting a

process of nature. I cannot, by any *argument*, show why bleeding should be improper in the strangles; indeed, if our practice were guided by theory only, we should be led to consider it as a case of common inflammation, and consequently adopt that mode of treatment which would tend to remove it most expeditiously, and prevent suppuration; and with this view we should have recourse to bleeding and purgatives: *experience*, however, certainly sanctions a different treatment, and has, I think, fully proved the propriety of using every means for encouraging suppuration. I have seen several hundred cases in which this plan has been pursued, and not one of them terminated unfavourably. Should the inflammation, however, spread to the lungs, occasioning great difficulty of breathing and fever, and particularly if the horse be past the age of five, bleeding must not be omitted; and if a laxative drink can be given, it will be found of great service. A rowel in the chest will also do good.

Should a cough or any unpleasant symptom remain after the strangles are healed, let the following alterative ball be given every morning, until moderate purging is produced; and if it be found necessary, let it be repeated after an interval of four or five days. It is almost superfluous to add, that great attention must be paid by the

groom; the head, neck, and chest, as well as the body, should be clothed; warm water should be given frequently in small quantities; a large quantity of litter should be allowed; and hand-rubbing to the legs should never be omitted.

ALTERATIVE BALL.

Barbadoes aloes	1½ dr.
Emetic tartar and Castile soap, of each . . .	2 dr.

To be made into a ball for one dose.

Catarrh, or Cold.

It would be superfluous to give a particular description of this complaint, since it is so well known, and it's appearances so generally understood, that scarcely any one can be at a loss to distinguish it from other diseases. It consists in an inflammation in the mucous membrane, which lines the internal part of the nose, throat, &c., sometimes attended with a slight degree of fever: hence arise the cough and discharge from the nostrils, which are the principal symptoms of catarrh. On the first attack of this complaint, bleeding will generally be found an effectual

remedy; but if it be neglected until a considerable discharge has taken place from the nostrils, it seldom proves beneficial. The following laxative, however, will be found a very useful remedy, and may be repeated after an interval of a few days, should it appear necessary: it will generally prevent those obstinate and even incurable coughs, which so often remain after a cold, and which not unfrequently terminate in broken wind.

LAXATIVE BALL.

Barbadoes aloes . . .	3 dr. to ½ oz.
Emetic tartar	1½ dr.
Castile soap	2 dr.

Sirup enough to form a ball for one dose.

A dose of fever powder is to be given every morning and evening, until the symptoms abate, or a considerable diuretic effect is produced, and then every second or third day only.

Sometimes a swelling takes place in the parotid glands, which are situate immediately beneath the ear. Should no unusual heat or tenderness be observed in these swellings, apply the stimulating ointment recommended for strangles; but if they feel hot, be painful, and appear to be in a state of active inflammation, a poultice is the best

remedy. If the eyes be inflamed and watery, a rowel should be inserted under the jaw; and if the inflammation in the throat be so considerable as to render swallowing painful and difficult, a blister will afford great relief. Hot bran mashes should be given frequently, which will not only serve to keep the bowels open, but will act as a fomentation to the inflamed membranes, since the horse will be constantly inhaling the vapour which escapes from them. Should he be costive (which is not likely to happen while he is taking bran mashes), let clysters be injected occasionally. The head and chest, as well as the body, should be well clothed, the legs frequently hand-rubbed, and a large quantity of litter allowed; by these means he will soon be restored to health. Should a cold be attended with a considerable degree of fever, or should the appetite go off, and the flanks work quicker than usual, it is necessary to make some alteration in the treatment. (See *Fever*, and *Inflammation of the Lungs*.) It is necessary to observe, before I conclude this subject, that strangles on their first attack are sometimes mistaken for a cold. This may be productive of mischief, since bleeding is generally improper in that complaint: if, therefore, a cold be accompanied with a swelling of the glands under the jaw,—if they feel hot and be painful,

and particularly if the horse be young,—we may conclude that the strangles are approaching, and treat it accordingly.

Should the cough remain after the other symptoms are gone off, give the laxative again; and if necessary, repeat it after a short interval. If the cough continue after this, let the following ball be given every morning for a week.

THE BALL.

Powdered squills . . .	1 dr.
Gum ammoniac . . .	3 dr.
Opium	½ dr.

Sirup enough to form a ball.

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*Chronic Cough**.

We have already noticed this complaint as one of the symptoms of a cold, but did not at that time give any particular direction for it's treatment, because it generally ceases as soon as it's *cause* (the cold) is removed. It sometimes happens, however, that the cough continues, although every other symptom is gone off.—This com-

* See *Cough*, in the Appendix.

plaint, which, from it's long continuance, is distinguished by the term *chronic*, may be readily accounted for, when it is recollected that what is called cold consists in an inflammation of the membrane which lines the nose and throat; and that this membrane also forms the internal surface of the windpipe and it's branches. When the cold, therefore, has been violent and improperly treated, the inflammation is liable to extend to the windpipe, or even to it's branches, causing an effusion of coagulable lymph from the membrane, which proves a constant source of irritation. It is probable, also, that the inflammation may sometimes render the membrane so very irritable, or so alter it's secretion, as to keep up a constant irritation and cough, without any effusion having taken place. When a considerable quantity of coagulable lymph has been effused, it obstructs the passage of the air in respiration in some degree, causing that sonorous kind of breathing, which is termed *thickness of wind*, or *roaring*. A blister to the throat has sometimes been found useful in the chronic cough. One of the following alterative balls is to be given every morning, until moderate purging is produced; and this, if assisted by proper attention to exercise, diet, and grooming, has often effected a cure.

The chronic cough is frequently occasioned by

worms in the bowels or stomach, and is then to be treated accordingly. (See *Worms.*)

BALLS.

N° 1.

Succotrine aloes .	1 dr. to 2 dr.
Castile soap	2 dr.
Tartarised antimony . . .	2 dr.

Sirup enough to form a ball for one dose.

Should the disease not submit to this remedy, try the following.

N° 2.

Gum ammoniacum	3 dr.
Powdered squill and opium, of each	1 dr.
Camphor	1 dr.

Sirup enough to form a ball for one dose.

This is to be given every morning, and continued five or six days. A stable, properly ventilated, should be chosen, and the vapours of foul litter carefully avoided.

Inflammation of the Eye.*

When the eye is inflamed, it loses in part it's beautiful transparency, sometimes appearing as if covered with a film; the lids are partially closed, the haws become more visible, and there is commonly a discharge of tears, or the eye appears watery. Should the inflammation have been brought on by some external injury, and particularly if it be not very considerable, the eye-lotion will be sufficient to remove it; but in more violent cases it will be necessary also to bleed moderately, and give a laxative ball. By these means, inflammation arising from external injury may generally be cured in a short time. The eyes often become inflamed in consequence of cold and fevers, in which cases *the cause* is to be chiefly attended to: when this is removed, the inflammation usually ceases.

The most common cause of this complaint is high feeding, without a due proportion of exercise. These cases require great care and attention, for unless proper remedies are employed on the first attack, the disease, though it appears to go off, will be frequently returning, and in all

* See Appendix, *Diseases of the Eyes.*

probability eventually produce blindness. The first remedy to be employed on this occasion is bleeding; and the quantity of blood that is drawn should be proportionate to the violence of the inflammation, and the *condition* of the animal. Should the vessels on the white part of the eye and inner part of the eye-lids appear to be distended with blood, great advantage will be derived from scarifying the latter with a lancet. A laxative ball is to be given, and the bowels afterward kept in a lax state by means of bran mashes. I have found a seton, placed immediately under the eye, a very useful remedy; but unless the operation is nicely performed, it frequently leaves an unpleasant mark behind, which would lead a person experienced in horses to suspect that the eye had been diseased, and might therefore diminish the value of the horse.

A shade, so adapted as to preserve the eye from the irritation of dust and light, will be found useful. This kind of inflammation generally comes on rather suddenly, sometimes attacking only one eye, at others both are affected. As there is no apparent cause for this sudden attack of inflammation, the groom very commonly attributes it to seeds or dust having fallen from the rack into the eye, and very little attention is paid to it. Notwithstanding this neglect, the disease

frequently goes off, and in some cases it's disappearance is nearly as sudden as it's attack: in a short time, however, it again appears as unexpectedly as at first, and again perhaps goes off. In this uncertain way it may continue a considerable time, the eyes sometimes appearing transparent, and free from inflammation; at others, watery, inflamed, and opaque on the surface: at length the internal parts of the eye are affected, and a cataract produced.

It has been supposed, that the diseases of a horse's eye are frequently hereditary, or dependent on some natural defect in the structure. I do not know how far this opinion may be true, but, never having seen a case which seemed to corroborate it, I am not inclined to give it much credit. It is not very improbable, however, that the eyes of some horses may be *naturally* weak, and more liable to become inflamed when exposed to the exciting causes of inflammation, than such as are originally endued with a proper degree of strength: but it appears to me, that where this weakness, or aptitude to disease, exists, it is more frequently the effect of some injury, which this tender and delicate organ has sustained, than a defect of *nature*. When the eye becomes inflamed, it is necessary to inquire into the *cause* of the inflammation: if it arise from any mecha-

nical injury, and be not very considerable, there is a probability of it's being speedily removed, by means of the remedies I have pointed out; but if the inflammation have arisen without any apparent cause, depending perhaps upon plethora, or redundancy of blood in the system, there will be some chance of a radical cure, provided the proper remedies are employed sufficiently early. If these be neglected at the commencement of the disease, though the inflammation after some time appears to go off, and the eye, to a superficial observer, seems to have recovered, yet the disease frequently returns, and ultimately occasions blindness. Should the disease have occurred before, and particularly if the former attack were violent, there is still less chance of it's being removed, and all our remedies will probably prove ineffectual. In this case the alterative N° 3 (see *Index*) may be tried. It frequently happens that when both eyes are inflamed, and a complete cataract forms in one of them, the other becomes perfectly sound and strong. It must be observed, that when a horse has suffered more than once from this disease, and is in low condition, evacuations must not be made too freely: there are few cases, however, where moderate bleeding and a laxative ball are not required. With respect to topical applications, or those remedies which are

applied immediately to the eye, I must confess that I have not seen much benefit derived from them, except when the inflammation has abated considerably, and there remains an opacity or film on the surface; and then common salt, finely powdered, has often proved useful. But if the eye have been in this state for some time, and the opacity is very considerable, white glass, finely powdered and mixed with honey, is a more effectual remedy. Whenever the eyes are weak, or in a state of inflammation, the vapours which arise from foul litter should be carefully guarded against; indeed, it is by no means an improbable conjecture, that, when the eyes are weak, these irritating vapours may often prove the exciting cause of inflammation.

There is a cartilaginous body connected with the eyes of horses commonly termed *the haw.* Whenever the eye is drawn into the socket (which the horse has the power of doing by means of a muscle that does not exist in the human subject), the haw is forced over the eye, so that when dust happens to adhere to the surface of the eye, he is enabled, by means of this cartilage, to wipe it off; and, as light is painful to the animal when the eye is in a state of inflammation, we generally find this organ, on such occasions, drawn more than usual into the socket, and consequently the

haw becomes conspicuous on it's surface. Farriers in this case consider the haw as an unnatural excrescence, and the cause of the disease: they frequently, therefore, cut it off.

Locked Jaw.

This disease, very fortunately, occurs but seldom, as it generally terminates fatally. It begins with a difficulty in mastication; at length, the jaws become so completely and immoveably closed, that neither medicines nor food can be got into the stomach. The muscles of the neck are generally in a state of rigid contraction, and the animal appears to suffer great pain. It is often brought on by trifling causes, such as wounds of the foot, inflammation of the tail, from docking or nicking, &c.; and sometimes it attacks without any apparent cause. Various remedies have been tried in this complaint, but I do not think any effectual mode of treatment has yet been discovered. Immersion in cold water, or even snow, is said to produce a temporary relaxation of those muscles by which the jaws are closed. Opium and camphor have been strongly recommended. I have lately been informed of a

case in which a combination of these medicines completely succeeded. In America and the West India islands, where the disease is much more frequent than it is in this climate, strong stimulants have been found effectual; it would be advisable therefore to try the same plan on horses, should opium and camphor fail. The best stimulants for this purpose are spirit of hartshorn, ether, opium, and brandy. I have been informed that a blister, applied to the spine or back, throughout it's whole length, from the withers to the basis of the tail, has proved successful in several cases. I have had only one opportunity of trying it, in which it did no good; but the disease had existed for some time, and had become very violent before any remedy was employed. (See *Appendix*.)

Lampas.

When the bars or roof of the horse's mouth, near the front teeth, become level with, or higher than the teeth, he is said to have the *lampas*, and this is supposed to prevent his feeding. Farriers burn down this swollen part with a red-hot iron made for the purpose. I believe this operation is

performed much more frequently than is necessary, but I have never seen any bad consequences arise from it.

Roaring.

This disease takes it's name from a peculiar sound in respiration, particularly when the horse is put into a brisk trot or gallop. It seems to arise from lymph that has been effused in the windpipe or it's branches, which, becoming solid, obstructs, in a greater or less degree, the passage of air. As a remedy for this complaint, blistering the whole length of the windpipe has been recommended; I believe, however, that it is always incurable, unless proper remedies are employed as soon as it is observed to be coming on. It generally begins like a severe cold, with difficulty in breathing, accompanied with a peculiar kind of wheezing: sometimes there is also considerable fever and soreness of the throat. In some cases, it attacks suddenly, and with great violence; in others, it comes on gradually, and is then more dangerous, as it is seldom attended to, and generally allowed to establish itself before proper remedies are employed. It is advisable, whenever

a horse is attacked with the above symptoms, to have recourse immediately to bleeding, purging, and blistering the throat. (See *Cough*, Appendix.)

Broken Wind.

It seems to be universally allowed that this complaint is incurable, though it will admit of considerable alleviation; and, if it's approach be perceived sufficiently early, may probably be prevented. Horses that appear to be most subject to it are those with voracious appetites, that eat even their litter, and keep themselves in good condition upon a moderate allowance of corn: also such as are fed highly, and at the same time not properly exercised. It has been observed by a modern author*, "that the most common appearance of the lungs in broken-winded horses is a general thickening of their substance, by which their elasticity is in great measure destroyed, and their weight specifically increased, at the same time that their capacity for air is diminished. During

* "An Inquiry into the Structure and Animal Economy of the Horse, by Richard Lawrence, Veterinary Surgeon, Birmingham,' 4to.; a work of much general merit.

life, the lungs entirely fill the cavity of the chest, so as to leave no space between their outward surface and the inward surface of the ribs. (See *Structure of the Lungs.*) Thus they dilate and contract, following up by their own elasticity the action of the ribs and diaphragm. If the chest be punctured in the dead subject, the air rushes in, and the lungs collapse: but if the horse were broken winded, the lungs do not collapse. This state of the lungs sufficiently accounts for the difficulty of respiration; for as their *faculty of dilatation is destroyed, the ribs cannot expand without forming a vacuum in the chest,* which the pressure of the external air prevents, which may be readily perceived in the case of broken wind; for then the intercostal muscles are so strongly retracted, as to form a deep furrow between every rib, as well as a depression in the flanks. On this account air is *received into the lungs with great difficulty, but it's expulsion is not so difficult,* as the return of the ribs and diaphragm naturally force it out by their pressure. Thus in broken-winded horses *inspiration is very slow,* but *expiration is sudden and rapid,* as may be seen by the flanks returning with a jerk."

It appears to me, that the observations of Mr. Lawrence on this subject are not correct. The lungs of broken winded horses, that I have exa-

mined, have generally been unusually large, with numerous air-bladders on the surface. This must have arisen from a rupture of some of the air-cells; for, in this case, some part of the air which is inspired will necessarily get into the *cellular membrane* of the lungs, and diffuse itself until it arrives at the surface, when it will raise the pleura so as to form the air bladders we observe*. This is the reason that the lungs of broken-winded horses do not collapse when the chest is punctured; and this will serve to explain the peculiar motion of the flanks in broken-winded horses, which does not consist, as Mr. Lawrence asserts, in a quick expiration and very slow inspiration, but quite the reverse; air is received into the lungs *very readily*, which is manifested by a sudden falling of the flanks, but is expelled *slowly*, and *with great difficulty*, as may be perceived by the long continued exertion of the abdominal muscles†.

* See Description of the Functions of the Lungs, &c., as above, page 4.

† A short time since, a horse completely broken winded was given to me for the purpose of making experiments relative to the glanders, a disease which has for many years occupied my attention. On destroying the animal, and examining the lungs with great care, very little disease could be observed. So far from their being thickened, and in the state Mr. Lawrence describes, they were specifically lighter

When the membrane which lines the windpipe and all it's branches has been affected with inflammation, it becomes thickened in consequence, and the capacity of the lungs will of course be diminished; this will cause a *quickness* in respiration, but not that irregular or unequal kind of breathing by which broken wind is characterised. The complaint which is thus produced is commonly termed *thick wind;* and the horse so affected, if made to move rapidly, wheezes like an asthmatic person, and is unfit for

than natural; and, though no air-bladders were perceived on the surface, there was evidently a great deal of air diffused in the cellular membrane of the lungs, which must have been occasioned by a rupture of one or more of the air-cells, or minute branches of the windpipe; there being no other source from which it could have been produced. Now this was a case of simple broken wind, which may be easily distinguished, not by an unusually quick motion of the flanks, but by an unequal motion. The flanks of a broken-winded horse are a long time in drawing up or contracting, which shows the difficulty he feels in expelling the air from his lungs, or in expiring; but when that is effected, the flanks drop suddenly, which shows that the air enters the lungs, or that the animal *inspires* with much greater ease than he expires. It often happens, however, that *broken* wind is complicated with *thickness* of wind, and, as I have before observed, is sometimes occasioned by it, which probably gave rise to the opinion we have endeavoured to refute. (See *Cough, Asthma,* and *Thickness of Wind,* Appendix.)

any violent exercise. It not unfrequently happens, I believe, that this complaint proves a cause of broken wind; for when the membrane is much thickened, many of the finer branches of the windpipe are probably obstructed in a greater or less degree: the violent coughing, which usually accompanies this disease, will, under such circumstances, be very liable to rupture some of the air-cells. The same effect may be produced by violent exercise when the stomach is distended with food or water. I believe, however, that a plethora, or fulness of habit, is most commonly the *remote* cause of broken wind. In that case, there is generally an undue determination of blood to the lungs, whereby the secretion within the air-vessels is increased, and perhaps rendered somewhat acrimonous and viscid, exciting a violent and troublesome cough*.

* It is is not very improbable that air is sometimes secreted or formed in the cellular membrane of the lungs; in which case a horse would be broken winded without any rupture of the air cells. I have seen a horse become broken winded rather suddenly, and when a violent cough had not preceded: I have also seen the symptoms of broken wind removed by turning a horse out, but they returned when he was taken into the stable again; and I recollect a horse, that would sometimes breathe very well, and at other times appear completely broken winded. From these circumstances, it does not appear improbable, that the cause of

Whenever a horse appears to be imperfect in his wind, if he cough violently, particularly when exercised, with unusual working of the flanks, and if at the same time he appear to be in good health and spirits, feeding heartily, and eager for water, let him be bled moderately, and take a laxative ball: by these means, assisted by a bran diet and regular exercise, the lungs will soon be relieved, and the cough, if not completely removed, will be considerably diminished. Afterward give the following ball every morning for a week, and take care that a regular exercise is never omitted: it will be advisable also to prevent the horse from filling himself too much with hay or water. The latter should be given five or six times a day, in small quantities; for the common method of stinting a horse in water, when his wind is supposed to be bad, is certainly prejudical. Corn should be given sparingly, as high feeding tends very much to aggravate the complaint. Bran is a useful diet, if mixed with corn; and if carrots, or any other succulent vegetable, can be procured, they will be found of considerable service. The vapours which arise from foul litter, and the air of a close stable, are extremely pernicious. I have

broken wind is sometimes a morbid formation of air in the cellular membrane of the lungs.

seen very good effects from turning the horse into a paddock during the day, when the weather is favourable. When the cough and other symptoms have been removed, these means must still be persevered in, or the disease will probably return: regular and long continued exercise tends more than any thing to keep it off; but violent exercise is extremely improper. Whenever costiveness occurs, it should be removed by means of a clyster and bran mashes; and should the horse be disposed to eat his litter, it is to be prevented by means of a muzzle.

THE BALL.

Powdered squills . . .	1 dr.
Gum ammoniac . . .	½ oz.
Powdered aniseeds. . .	3 dr.

To be made into a ball with sirup, for one dose.

Jaundice, or Yellows.

This disease is indicated by a yellowness of the eyes and mouth, dulness, and lassitude; the appetite is generally diminished, the urine of a reddish or dark colour. Sometimes the complaint is attended with costiveness, but more commonly

with a purging. This disease does not often arise from an obstruction in the biliary ducts, as in the human subject, but generally from increased action of the liver, whereby an unusual quantity of bile is secreted. Inflammation of the liver is sometimes mistaken for jaundice, but may be distinguished from it by the *fever and debility* with which it is always accompanied.

When costiveness is one of the symptoms of jaundice, give the ball N° 1 every morning, until moderate purging is produced; but if the bowels be already open, or in a state of purging, give the ball N° 2 every morning. The horse's strength should be supported by infusion of malt or water-gruel.

THE BALL.

N° 1.

Calomel	½ dr.
Barbadoes aloes	1½ dr.
Castile soap	2 dr.
Rhubarb	3 dr.

To be made into a ball with sirup for one dose.

N° 2.

Calomel and opium, of each	1 dr.
Columbo root, powdered	3 dr.
Powdered ginger	½ dr.

Sirup enough to form a ball for one dose.

There is a species of staggers, of which I have seen a great number of cases since I left the army, where yellowness of the eyes and mouth is invariably one of the symptoms; which has often led farriers to consider it as the jaundice, or *yellows*, as they term it; and their remedies have generally consisted of saffron, turmeric, or other inert medicines of a *yellow colour*, which they seem to consider as an indispensable quality in all medicines employed for the *yellows*. On the same principle, they give dragon's blood, a *red* resinous substance, and other *red* medicines, in all cases of internal hemorrhage or bleeding, such as bloody water, &c. (See *Staggers*, and *Diseases of the Stomach*).

Flatulent Colic, Gripes, or Fret.

This disease generally attacks rather suddenly, and is brought on by various causes: sometimes it is occasioned by drinking a large quantity of cold water when the body has been heated, and the motion of the blood accelerated by violent exercise. In horses of delicate constitutions, that have been accustomed to hot stables and warm clothing, it may be brought on merely by drinking

water that is very cold, though they have not been previously exercised. Bad hay appears to be another cause of the complaint: but it frequently occurs without any apparent cause, and then probably *depends* upon a spasmodic action of the stomach or bowels, occasioning a constriction of the intestine, and a confinement of air. It has not been ascertained whether this air be produced by a fermentation of the contents of the bowels, or formed by the arteries of their internal coat: which ever of these is the source of the air, there is no doubt that the immediate cause of it's formation and confinement is weakness, or a loss of vital energy. On this account, medicines of a stimulating quality are the most effectual remedies; therefore, the common flatulent colic is easily cured by grooms and farriers, who seldom give any other kind of medicines. The greatest caution, however, is necessary on this occasion; and I have known many valuable horses destroyed by adopting hastily this mode of treatment. There is a species of flatulent colic, which, if treated in the common way, is sure to terminate fatally, though it is not at first of an inflammatory nature. This disease will be described in the Appendix, under the head *Diseases of the Bowels*; and it's remote cause will be more par-

ticularly shown under the head *Humours*, Appendix*.

The pain and uneasiness which this complaint occasions are so considerable, as to alarm those who are not accustomed to see it, and lead them to be apprehensive of dangerous consequences; but, if properly treated, it may be easily and expeditiously removed. It begins with an appearance of uneasiness in the horse, he frequently pawing his litter; he voids a small quantity of excrement, and makes fruitless attempts to stale; the pain soon becomes more violent; he endeavours to kick his belly, and looks round to his flanks, expressing by groans the pain he labours under; at length he lies down, rolls about the stall, and falls into a profuse perspiration. After a short time, he generally gets up, and appears for a minute or two to be getting better, but the pain

* The author intended to write a chapter on *humours*, in order to show the pernicious tendency of the humoural pathology, as it is termed, which supposes almost all diseases to depend on some noxious humour in the blood. It is sufficient, however, to observe, that the strong purgatives, which are given with a view to expel such *humours*, sometimes render the bowels so irritable, that very slight causes will bring on the flatulent colic; and if a *strong* stimulant be given in such cases, it frequently causes inflammation of the intestines.

soon returns, and the succeeding paroxysm is generally more violent than the former; the pulse is seldom much accelerated, nor are there any symptoms of fever. The disease will sometimes go off spontaneously: it more commonly happens, however, when proper remedies are not employed, that the air continues to accumulate, and so distends the intestine, as to produce inflammation of it's coats: the distension has sometimes been so considerable as to rupture the intestine, whereby the horse is speedily destroyed.

As soon as this disease is observed, let one of the following draughts be given, and a clyster injected, composed of six quarts of water-gruel or warm water, and eight ounces of common salt. If the disease have existed for several hours, and the pain appear to be very considerable, particularly if the pulse have become quick, it will be advisable to bleed to three quarts, with a view to prevent inflammation and remove the spasmodic contraction of the intestine. If the disease, however, be perceived on it's first attack, the draught and clyster will generally be sufficient to cure it; but should no relief be obtained by these means in an hour or two, let the draught be repeated, and let the belly be rubbed for a considerable time with the mustard embrocation. Should the disease be so obstinate, as to resist even these reme-

dies, which will scarcely ever happen, give a pint of castor oil, with an ounce and a half of tincture of opium: as soon as the horse gets up, let him be rubbed perfectly dry by two persons, one on each side; and afterwards let him be well clothed. It is necessary in this complaint to provide a large quantity of litter, for the purpose of preventing the horse from injuring himself during the violence of the paroxysm.

THE DRAUGHT.

N° 1.

Balsam of capivi	1 oz.
Oil of juniper	2 dr.
Spirit of nitrous ether . . .	1 oz.
Simple mint water	1 pint

Mix for one dose.

N° 2.

Venice turpentine	½ oz.

Mix with the yolk of an egg, and add gradually

Peppermint water	1 pint.
Spirit of nitrous ether . . .	½ oz.

Mix for one dose.

N° 3.

Camphor	2 dr.
Oil of turpentine	½ oz.
Mint water	1 pint.

Mix for one dose.

As this complaint is liable to occur during a journey, in situations where the above remedies cannot be readily procured, I have annexed a formula for a ball, for the convenience of those who are in the habits of travelling. If this ball be wrapped up closely in a piece of bladder, it may be kept a considerable time without losing it's virtues.

THE BALL.

Castile soap	3 dr.
Camphor	2 dr.
Ginger	1½ dr.
Venice turpentine	6 dr.

To be made into a ball for one dose, with liquorice powder or flour.

Apoplexy, or Staggers.

This disease generally begins with an appearance of drowsiness, the eyes being inflamed and full of tears, and the appetite diminished; the disposition to sleep gradually increases; and in a short time the horse is constantly resting his head in the manger, and sleeping. The pulse is seldom much altered; in a few cases, I have found it unusually slow: costiveness and a defective secretion of urine commonly attend this complaint. Sometimes the disease will continue in this state for several days; at others, it assumes a formidable appearance very early, or even at it's commencement, the horse falling down and lying in a state of insensibility, or violent convulsions coming on. Sometimes a furious delirium takes place, the horse plunging and throwing himself about the stable, so as to render it dangerous for any one to come near him. From this variety in the symptoms, writers on farriery have divided the disease into the *sleepy* and the *mad* staggers.

There is another kind of staggers, which arises from a distension of the stomach, and most commonly attacks horses employed in agriculture, or

in any kind of hard work, when their condition is not equal to their labour, and particularly when they are badly managed with respect to food and water. Since the author left the army, he has met with a great number of cases of this kind; and being informed that it uniformly proved fatal, destroying a very considerable number of horses annually, he was led to pay particular attention to it; and was the more strongly induced to this, from finding his own treatment unsuccessful.

The bodies of horses that died of the complaint were carefully examined, and at length a mode of treating it was discovered, which, if seasonably employed, almost always proves successful. As the disease is now known to originate in the stomach, it will be described under that head in the Appendix. (See *Stomach Staggers.*) It is sufficient to observe here, that it may be distinguished from apoplexy, or genuine staggers, by a yellowness of the eyes and mouth, and a twitching or convulsive motion of the muscles of the breast; the horse appears very feeble, the head hanging down, as if oppressed with a considerable weight; the fore legs totter, and frequently give way suddenly, so that the animal appears to be on the point of falling, but he rarely falls down,

except in the last stages of the complaint; he seems to be insensible, and often forces his head against the wall with such violence, that the projecting parts are much bruised.

From the view we have given of the staggers, it will appear, that the terms which farriers have adopted to distinguish it's different appearances are very inadequate; and that it would be better to distinguish the disease under the two following heads; viz. the *idiopathic* and the *symptomatic* staggers. In the former, bleeding is the grand remedy, and seldom fails of affording relief, if employed with freedom at the commencement of the disease. It will be advisable also to give the following purgative draught, and inject a stimulating clyster, composed of a gallon of water and eight ounces of common salt. Should not the symptoms abate in eight or ten hours after the bleeding, there will be great probability of obtaining relief by opening the temporal arteries, and suffering them to bleed freely.

I once saw a case in which the efficacy of this plan was remarkably conspicuous: the horse had been labouring under the disease for several days, and delirium had taken place, though he had been bled freely, and, in every respect, according to the account I received, treated properly. When

I saw him, he was lying down in a state of insensibility, having just before been plunging and throwing himself about very violently: the attendants supposed him to be dying; and, indeed, I should have been of the same opinion, had not the pulse retained some degree of strength. I immediately opened both temporal arteries, and, after they had bled about ten minutes, the horse got upon his legs, appeared perfectly easy, and from that moment gradually recovered, without the assistance of any other remedy.

When the disposition to sleep is not removed by the first bleeding, the head should be blistered, and a rowel inserted under the jaw.

PURGATIVE DRAUGHT.

Barbadoes aloes	1 oz.
Castile soap	2 dr.
Prepared kali	1 dr.
Water	1 pint.

Mix for one dose.

Diarrhœa, or Purging.

This is not a very common disease in the horse, and seldom difficult of cure. It may be

occasioned by a suppression of perspiration, or by an increased secretion of bile. From whatever cause it may proceed, give in the first place the following laxative ball; and if the disease do not cease in two or three days, let the astringent ball be given. Warm clothing is particularly required in this complaint, and exercise should not be neglected; his water should be moderately warm, and given frequently in small quantities. When a purging is accompanied with griping pains and fever, it is to be considered as a case of inflammation in the bowels, and treated accordingly.

LAXATIVE BALL.

Barbadoes aloes	2 dr.
Powdered rhubarb	3 dr.
Cascarilla bark, powdered. .	2½ dr.
Castile soap	2 dr.

Sirup enough to form a ball for one dose.

ASTRINGENT BALL.

Powdered opium	½ dr.
Prepared chalk	6 dr.
Powdered cinnamon, or cassia	1½ dr.
Tartarised antimony	2 dr.

To be formed into a ball with sirup, or mixed into a drink with mint water, for one dose.

Diabetes, or excessive Staling.

This disease often proves extremely obstinate, and not unfrequently incurable: I am inclined to believe, however, that, if attended to at it's commencement, a cure may be effected without much difficulty. The complaint at first consists merely in an increased secretion of urine, the horse staling frequently, and in considerable quantity; the urine is generally transparent and colourless, like water; at length he becomes feverish, the mouth feels dry, and he seems to suffer much from thirst; the appetite is diminished, and the pulse becomes quick; he is generally hidebound, and gradually loses flesh and strength. Lime water has been much recommended as a remedy for this disease: I have seen it given, however, in two cases, without any good effect. Others recommend diaphoretic medicines, from a supposition that it depends in great measure upon a suppression of perspiration. Bark and other tonics have also been considered as useful remedies. I had four cases of diabetes under my care, nearly about the same time, and they were all speedily cured by means of the following ball:—

BALL FOR DIABETES.

Opium	1 dr.
Powdered ginger . . .	2 dr.
Yellow Peruvian bark .	½ oz.

Sirup enough to form a ball for one dose.

But these were all recent cases, and not attended with fever, nor had the horse lost much strength, or become hidebound in any considerable degree; yet the disease was well marked, and would, I doubt not, have produced all these symptoms, had it not been opposed as soon almost as it made it's appearance. In all these cases the quantity of urine discharged was very considerable; the mouth was dry; and there appeared to be a constant thirst. It seems, therefore, highly necessary to attend to this disease at it's commencement, since, if neglected, it becomes extremely obstinate, and sometimes incurable. Should the above remedy fail, try one of the following formulæ:—

BALLS FOR DIABETES.

N° 1.

Emetic tartar	2 dr.
Opium	1 dr.

To be made into a ball for one dose.

N° 2.

Salt of hartshorn	2 dr.
Opium	½ dr.
Powdered ginger	1 dr.
Liquorice powder	3 dr.

To be made into a ball for one dose.

N° 3.

Salt of steel	½ oz.
Myrrh	2 dr.
Ginger	1 dr.

To be made into a ball for one dose.

N° 4.

Powdered Columbo root . .	3 dr.
Cascarilla	2 dr.
Salt of steel	2½ dr.
Prepared kali	1½ dr.
Tincture of opium	½ oz.

To be mixed with strong beer, or porter, and given as a drink at once.

Remark.—The horse's diet should be nutritious, and easy of digestion: and he should be allowed to drink small quantities of weak lime water; or, if he refuse this, common water frequently.

Suppression of Urine.

HORSES are often attacked with a difficulty in staling, or making water, sometimes amounting to a total suppression of that excretion. This most commonly arises from spasm in the neck of the bladder, or from hardened excrement in the rectum or latter part of the intestines.

In the first place, let the hard excrement be carefully removed by the hand and a common clyster; and if the horse happen to be costive, give the following laxative:—

Barbadoes aloes, in powder . .	2 dr.
Prepared kali	1 dr.
Water	6 oz.
Castor oil	4 oz.

To be given as a drink.

Should the disease continue, give the following ball; or, if the horse be not costive, let it be given at first:—

Nitre.	1 oz.
Camphor	2 dr.

Linseed powder and sirup enough to form a ball for one dose.

Should there be any appearance of fever, or should the horse appear to feel pain when the loins are pressed upon, it is probable that the kidneys are inflamed. In such cases, the ball would be improper. (See *Inflammation of the Kidneys.*)

Worms.

THERE are three kinds of worms found in horses. The most common and mischievous reside in the stomach, and are named *bots.* They are of a reddish colour, and seldom exceed three quarters of an inch in length. At one extremity they have two small hooks, by which they attach themselves, and the belly seems to be covered with very small feet: they are most frequently found adhering to the insensible coat of the stomach, and then they do not appear to cause any considerable uneasiness or inconvenience. Sometimes, however, they attach themselves to the sensible part, and do great injury to this important organ, keeping up a constant irritation, thereby occasioning emaciation, a rough, staring coat, hidebound, and a cough. I have met with several instances of their destroying the horse, by ulcerating the stomach in a con-

siderable degree; and cases are recorded where they have penetrated quite through the stomach. It is astonishing with what force these worms adhere, and how tenacious they are of life: they have been found to resist the strongest poisons, nor have we yet discovered any medicine capable of destroying them, or of detaching them from their situation. It seems probable that this worm, like the caterpillar, undergoes several changes. It is said to be originally a fly, which, depositing it's eggs in the horse's coat, causes an itching, that induces him to bite the part. In this way he is supposed to swallow some of the eggs, which, by the heat of the stomach, are brought to maturity, and produce bots. When the bots are fit to assume the chrysalis state, they are spontaneously detached, and gradually pass off with the fæces. This is the most rational account we have of their production.

It has been asserted, that the fly from which bots are produced crawls into the anus of horses, and deposits it's eggs there; that the worms when hatched soon find their way farther up the intestines, and often penetrate into the stomach. This account is literally copied by a late writer on Veterinary Pathology*; but it appears to me ra-

* Bydhagh's Veterinary Pathology.

ther strange, that any one who has considered the structure of the horse's intestines should for a moment give credit to it. It seems impossible indeed for these worms to crawl from the anus to the stomach; and, as far as my observation goes, they are never found residing in the intestines. Sometimes we find two or three, but they are evidently proceeding toward the anus to be expelled. I have before observed, that I am not acquainted with any medicine that is capable of detaching or destroying these worms, though I have frequently tried the strongest mercurial preparations, and many powerful medicines.

I have used the yellow emetic mercury, or the vitriolated quicksilver, as recommended by the writer just quoted, as well as every other mercurial preparation, but never saw a single bot expelled by them.

The next worm we have to describe is very slender, of a blackish colour, and seldom exceeds two inches in length. It is never found in the stomach, and very rarely in the small intestines, the largest part of the canal being generally the place of it's residence. Here it proves a constant source of irritation, occasioning loss of condition, a rough unhealthy looking coat, and frequently a troublesome cough. A variety of alterative me-

dicines have been proposed for the destruction of worms of this kind, and some of them are supposed to be infallible: I believe however, that none of them are possessed of much efficacy, and we ought not therefore to depend upon them.

The following are the alteratives to which I allude:—savin, rue, box, æthiops mineral, antimony, sulphur, emetic tartar, calomel, and vitriolated quicksilver; the last two, if given with aloes, so as to purge briskly, and particularly the calomel, are excellent remedies; but given merely as alteratives they do no good.

I have generally found the following ball very effectual, giving the preceding night from half a dram to a dram of calomel. I have often mixed the calomel with the ball, and found it equally efficacious: the former method, however, is generally preferred.

THE BALL.

Barbadoes aloes	6 dr.
Powdered ginger. . . .	1½ dr.
Oil of wormwood . . .	20 drops.
Prepared natron	2 dr.

Sirup enough to form a ball for one dose.

It is often necessary to repeat this medicine.

but there should always be an interval of ten days between each dose.

The third kind of worm is of a whitish colour, frequently seven or eight inches in length, and generally found in the lower part of the small intestines. Worms of this kind are not so common as the others, but appear to consume a considerable quantity of chyle, or the nutritious parts of the food. They may be got rid of by the same means that we have recommended for the small blackish worm.

We may always be satisfied of the existence of worms in the intestines, when a whitish or light straw coloured powder is observed immediately beneath the anus. I have sometimes succeeded in destroying worms, by giving one dram and a half of aloes every morning, until purging was produced.

Hidebound.

This term implies a tightness of the skin, which feels as if it were glued to the ribs, the coat having at the same time a rough unhealthy appearance. This complaint is generally occasioned by worms or want of attention in the groom: it

occurs, sometimes, however, without any manifest cause. In such cases give the alterative ball N° 1 every morning, until moderate purging is produced; and if this do not succeed, try the alterative N° 2, which is to be given every morning for eight or ten days, taking care to assist it's operation by warm clothing, good grooming, and regular exercise. The exercise should not be confined to walking, but may be carried so far as to excite a moderate perspiration. Great care must afterward be taken that the horse does not get cold. Let him be put into the stable while warm, and immediately clothed: when the legs and head have been well cleaned, remove the cloth, and continue to rub the body with large wisps of clean straw, until it is quite dry.

I cannot forbear mentioning here a remedy that is employed in some parts of Staffordshire for this complaint, as it clearly evinces how necessary it is to rescue this valuable animal from the barbarous and absurd treatment of illiterate blacksmiths. An account of this operation was sent me by a gentleman who saw it practised a few months ago. "The head and legs of the horse being secured, two men (one on each side) pull the hide from the ribs in about fifty places with pincers." The proprietor of this unfortunate animal must surely have been destitute of common

sense or humanity, to allow an ignorant unfeeling farrier to perform so cruel and fruitless an operation.

ALTERATIVE BALLS.

N° 1.

Barbadoes aloes	1 oz.
Castile soap	9 dr.
Powdered ginger . . .	6 dr.

Sirup enough to form a mass, to be divided into four doses.

N° 2.

Tartarised antimony . .	2½ oz.
Powdered ginger . . .	1½ oz.
Opium	½ oz.

Sirup enough to form a mass, to be divided into eight balls.

(See *Condition.*)

Surfeit.

This absurd term is given by farriers to a disease of the skin, consisting in small tumours or knobs which appear suddenly in various parts of the body, sometimes in consequence of drinking

largely of cold water, when the body is unusually warm; but it appears frequently without any manifest cause. It may be easily cured by bleeding moderately, or giving a laxative ball: sometimes, indeed, it goes off without any medical assistance. There is another disease of the skin, of the same name, which is generally more obstinate, and attacks horses that are hidebound and out of condition. In this, a great number of very small scabs may be felt in various parts of the body; the horse is frequently rubbing himself; and sometimes the hair falls off from those parts which he rubs. This complaint approaches to the nature of mange, and requires the same treatment, assisted by a generous diet, good grooming, and regular exercise. (See *Condition.*)

Mange.

This disease is seldom met with except in stables where scarcely any attention is paid to the horses, and where their food is of the worst quality: it is certainly very contagious, and may in this way attack horses that are in good condition. It is known to exist by the horse constantly

rubbing or biting himself, so as to remove the hair, and sometimes produce ulceration; the hair of the mane and tail frequently falls off, and small scabs are observed about the roots of that which remains. The mange is, I believe, a local disease, and requires only the following ointment or lotion for it's removal: in obstinate cases, however, it may be advisable to try the effect of the following alterative.

MANGE OINTMENT.

N° 1.

Sulphur vivum, finely powdered	4 oz.
Oil of turpentine	3 oz.
Hog's lard	6 oz.

Mix.

N° 2.

Oil of turpentine	4 oz.
Strong vitriolic acid	½ oz.

Mix cautiously, putting in the acid by a little at a time, and add

Train oil	6 oz.
Sulphur vivum	4 oz.

Mix.

MANGE LOTION.

White hellebore, powdered . . 4 oz.

Boil in 3 pints of water to 1 quart, then add

Muriate of quicksilver . . . 2 dr.

that has been previously dissolved in 3 drams of muriatic acid.

ALTERATIVE FOR MANGE.

Muriate of quicksilver . . .	½ oz.
Tartarised antimony	3 oz.
Powdered aniseeds	6 oz.
Powdered ginger	2 oz.

Sirup enough to form a mass, to be divided into sixteen balls, one of which is to be given every morning.

Should these appear to diminish or take off the appetite, or create a purging, they must be discontinued two or three days.

Grease.

THIS disease consists in an inflammation, swelling, and consequent discharge from the heels, the matter having a peculiar, offensive

smell, and the heels being sometimes in a state of ulceration; the swelling frequently extends above the fetlock joint, sometimes as high as the knee or hock. When the inflammation and swelling are considerable, apply a large poultice to the heels (see *Poultice*), taking care to keep it constantly moist by adding to it occasionally a little warm water; at the same time let a dose of physic be given. After three or four days, the inflammation and swelling will have abated considerably, the poultice may then be discontinued, and the astringent lotion applied five or six times a day. Should the heels be ulcerated, apply the astringent ointment to the ulcers; and if they be deep, and do not heal readily, wash them with the detergent lotion previous to each dressing. Regular exercise is of the highest importance, but it is necessary to choose a clean and dry situation for the purpose.

In slight cases of grease, the astringent lotion and a few diuretic balls will generally be found sufficient to effect a cure; but when the disease is of long standing, and particularly if the horse have suffered from it before, there will be more difficulty in its removal. In such cases the following alterative powder may be given in the corn every day, until it produces a considerable diuretic

effect: in very obstinate cases, rowels in the thigh have been found useful. Digitalis, or fox-glove, has been recommended in those swellings of the legs which are the consequence of grease: I have not yet tried it's effect in this way, at least not sufficiently to give an opinion on the subject. It is a violent medicine in the horse, very apt to take off the appetite and injure the stomach, and must therefore be given with caution: the dose is from half a dram to one dram.

Though the grease is most commonly occasioned either by high feeding and want of exercise, or by neglect in the groom, there are cases which seem to depend on general debility. I do not believe that this is ever the exciting cause of the disease, but am convinced that a horse is rendered more susceptible of it by being in a state of weakness, and that the complaint sometimes owes it's continuance to this cause. When a horse has suffered much from this disease, and particularly if he appear to be weak and out of condition, a liberal allowance of corn will tend to recover him, if assisted by the astringent lotion and careful grooming. In cases of this kind exercise is essentially necessary. It must be obvious, that when this disease depends upon debility, a dose of physic would not be an eligible remedy, yet conside-

rable benefit has sometimes been obtained by giving the following alterative every morning until the bowels are moderately opened.

ALTERATIVE BALL.

Succotrine aloes . . . . . 1 oz.
Castile soap . . . . . 1½ oz.
Powdered ginger and myrrh, of each ½ oz.
Sirup enough to form a mass, to be divided into six balls.

This medicine, though of an opening quality, will improve the horse's strength, and at the same time promote absorption.

ALTERATIVE POWDER.

Powdered resign and nitre, of each . 1 oz.
Mix and divide into eight doses.

Nothing tends so much to prevent grease and swelling of the legs, as frequent hand-rubbing, and cleaning the heels carefully, as soon as a horse comes in from exercise. In inveterate cases of grease, where the disease appears to have become habitual in some degree, a run at grass is the only remedy. If a dry paddock can be procured, where a horse can be sheltered in bad weather, and fed with hay and corn, it will be found ex-

tremely convenient, as in such circumstances he may perform his usual labour, and at the same time be kept free from the complaint. In a few obstinate cases I have seen the mercurial alterative of service, giving one ball every morning until the bowels are opened.

ASTRINGENT LOTION.

N° 1.

Alum, powdered	1 oz.
Vitriolic acid	½ dr.
Water	1 pint.

Mix.

N° 2.

Alum, powdered	4 oz.
Vitriolated copper	½ oz.
Water	1½ pint.

Mix.

N° 3.

Sugar of lead	½ oz.
Vinegar	6 oz.
Water	1½ pint.

Mix.

The strength of these lotions often requires to be altered. Where the inflammation and irrita-

bility of the part are considerable, they must be diluted with an equal quantity of water; but if the inflammation be subdued, and a swelling and ulceration remain, the alum solution cannot be made too strong.

ASTRINGENT OINTMENT.

N° 1.

Hog's lard	4 oz.
Oil of turpentine . . .	2 dr.
Water of acetated litharge	½ oz.

Mix.

N° 2.

Venice turpentine . . .	1 oz.
Hog's lard	4 oz.
Alum, finely powdered .	1 oz.

Mix.

MERCURIAL ALTERATIVE.

Calomel	½ dr.
Aloes	1 dr.
Castile soap	2 dr.
Oil of juniper	30 drops.

To be made into a ball with sirup, for one dose

ASTRINGENT POWDER.

N° 1.

Powdered alum . . . 4 oz.
Bole . . . . . 1 oz.

Mix.

N° 2.

Vitriolated zinc, powdered bole, of each . . . } 2 oz.

Mix.

N° 3.

Acetated ceruse . . . 2 oz.
Bole . . . . . 1 oz.

Mix.

Malanders and Salanders.

When a scurfy eruption appears on the posterior part of the knee joint, it is termed *malanders;* and when the same kind of disease happens on the anterior of the hock joint, it is named *salanders.* Should these complaints occasion lame-

ness, it will be proper to give in the first place a dose of physic. Let the hair be carefully clipped off from the diseased part; and let all the scurf be washed off with soap and warm water: a cure may then be soon effected by applying the following ointment twice a day:—

THE OINTMENT.

N° 1.

Ointment of wax or spermaceti	2 oz.
Olive oil	1 oz.
Camphor and oil of rosemary, of each	1 dr.
Water of acetated litharge	2 dr.

Mix.

N° 2.

Ointment of nitrated quick-silver, olive oil, of each	1 oz.

Mix.

N° 3.

Oil of turpentine	½ oz.
Vitriolic acid	1 dr.

Mix cautiously, putting the acid by a little at a time and add of

Oil of bay	3 oz.

Mix.

The following lotion has often succeeded:—

Blue vitriol	2 oz.
Alum	3 oz.
Water	1 quart.
Nitrous acid	1 dr.

Mix, and apply to the diseased part daily, after it has been well cleansed.

(For the mode of prevention, see *Grooming*.)

Glanders.

This disease is contagious, and has, I believe, hitherto proved incurable. The most essential thing to be known with respect to the glanders is the method of preventing their being communicated to sound horses, and the appearances by which they may be with *certainty* distinguished from other diseases. The symptoms are, a discharge from one or both nostrils, and a swelling of the glands under the throat. If one nostril only be affected it generally happens that the swollen gland is on the same side of the throat. Sometimes the disease remains in this state for a considerable time, at others the discharge increases, becomes of a greenish colour and very

fetid; ulceration takes place within the nose, and the swollen gland becomes harder, and feels as if closely attached to the jaw bone.

A cold has sometimes been mistaken for the glanders, but may very easily be distinguished from them. In colds, there is generally a certain degree of fever, the eyes appear dull or watery, the appetite is diminished, and there is almost always a cough. If the glands of the throat should swell, they are not so closely attached to the jaw bone as in the glanders, but feel loose and moveable under the skin, they are also generally in a state of active inflammation, feeling hot, and softer than in the glanders. In colds, both nostrils are almost always affected; in the glanders, it frequently happens that the discharge is from one only. In colds, I have never seen the nostrils ulcerated; in the glanders, it always happens, though at different periods of the disease: sometimes ulceration takes place at it's commencement, at others a month or two may elapse before it can be perceived.

The strangles have been sometimes mistaken for the glanders; but in this disease the inflamed glands very soon suppurate and burst, whereby all the other symptoms are generally removed, whilst in the glanders the glands seldom or never suppurate. In order, however, to avoid all danger, it is

advisable, the moment a horse is perceived to have a discharge from his nose, to put him into a stable where he can have no communication with other horses. If the glands of the throat be enlarged and inflamed, apply a large poultice to them, steam the head three or four times a day, let the horse be well clothed, particularly about the head, and give the fever powder N° 2 every day, or once in twelve hours. Should the discharge arise from a cold, it will soon be removed by these means. When considerable ulceration is perceived in the nose, with the other concomitant symptoms of the glanders, the horse should be destroyed instantly.

The most effectual mode of purifying stables in which glandered horses have been kept, is to remove, or carefully wash, every thing on which the horse may have deposited any matter, and afterward to cover every part of the stable with a coat of lime and size.

Though all the experiments hitherto made, in order to discover a remedy for this destructive malady, seem to have proved fruitless, I can by no means agree with those who think that the subject is exhausted, and that any further attempts would be superfluous: such sentiments may indeed be pardonable in those practitioners of the art who know nothing of the anatomy and physiology of

the horse, or the properties of medicine, and consequently can have no principles to conduct them in their experiments; but since the art has been placed on a more respectable footing, and the practice so much improved by the attention and abilities of the present professor, we may expect that some farther and more successful experiment will be made; and that ultimately we may see this truly useful animal rescued from a disease so eminently destructive.

It is pretty well known, that when the venereal disease first made it's appearance in Europe, it's ravages were severely felt, and thousands fell victims to it; almost every medicine in the Materia Medica was tried without effect, and it was generally considered as an incurable disorder. Had the practitioners of medicine been then discouraged by the failure of so many experiments, and given it up as a hopeless undertaking, it would have been unfortunate indeed for the votaries of the cyprian goddess; but, by perseverance, every difficulty was surmounted, and the antidote at length discovered. Thus, although our attempts to cure the glanders have hitherto proved ineffectual, it ought by no means to be relinquished as a fruitless inquiry; rather, indeed, ought it to operate as a stimulus on the veterinarian, and prompt him to an exertion of all his talents and

ingenuity; since the more difficulty there is in the pursuit, the more honour and profit will there be attached to the discovery. There may be many steps to ascend before we can arrive at this desirable object, and he who makes any progress towards it, does a service to society: we shall not perhaps *suddenly* find out the method of curing the disease, though it may be accomplished by *gradual* and successive discoveries.

From the observations I have been able to make on the glanders, they appear generally to originate in contagion, though sometimes, I believe, they arise spontaneously, or from the respiration of impure air. A remarkable instance of this happened a few years ago: some horses were embarked for the continent; during the voyage, it became necessary to shut the hatchways, whereby a proper circulation of air was prevented: in consequence of this, several horses were suffocated, and those that survived were immediately attacked with the glanders. That they arise from contagion is proved by almost daily experience. How important, therefore, must it be, whenever this dreadful disorder occurs, to bear this circumstance in remembrance, and to employ means which may effectually prevent it's spreading! and how many valuable horses might have been saved, had the proper precautions been at-

tended to by grooms, and those who have had the management of glandered horses!

Upon considering the origin, progress, and symptoms of glanders, a striking analogy will appear between them and the venereal disease. When venereal matter is applied to a part where a mucous fluid is secreted, as in the urethra, or urinary passage, or the internal surface of the nose, a peculiar kind of inflammation is produced, and poisonous matter formed, which has the power of producing the disease in others. If glanderous matter be applied to the nose of the horse, an inflammation and discharge of matter will take place, and this matter will possess the same poisonous quality as that which produced it. When the venereal matter is applied to the skin where the cuticle is very thin, or has been abraded, a chancre or ulcer will be produced, and the contiguous glands will become inflamed and swollen from an absorption of the poison, which will ultimately get into the circulation, and infect the whole system. When the matter of glanders is applied in a similar way to a horse, it produces a chancre, or, as it is commonly termed, a farcy ulcer: the neighbouring glands are inflamed and swollen; the poison, after a time, gets into the blood, and the horse becomes completely glandered, having at the same time the disease termed

farcy. When venereal matter is applied to a sound part of the same subject that produced it, it is said to be perfectly harmless: so it is with the glanderous matter. But here it must be observed, that when glanderous matter is applied to the skin of a horse already labouring under the disease, although it be taken from another horse, a chancre is not produced. Medicines which have a considerable quantity of oxygen in their composition, and which have so weak an attraction for that element, as to part with it readily, are the remedies for the venereal disease; and of these, the preparations of quicksilver are the most remarkable, though nitrous acid and oxymuriate of potash are said also to be antidotes to the venereal poison. I have seen the discharge, and other symptoms of glanders, considerably diminished by the use of acids, and have known it removed for a time by means of mercurial preparations. The farcy has been frequently cured by means of mercury; but I believe it has never been known to cure the glanders radically; and I have been informed that it has been very fairly tried.

From the knowledge we possess of the glanders, we may surely be encouraged to pursue the inquiry, whenever it can be done with safety; and though our experiments may not lead us to any

infallible remedy for the disease, they may teach us a more certain mode of prevention than any we are now acquantied with, and may possibly enable us even to cure it in it's earliest stages. It has been said, that inoculation with cow-pock matter will render a horse insusceptible of glanders; but this, I believe, is at present merely conjecture: the idea is certainly plausible, and the experiment ought to be made. (See *Glanders*, Appendix.)

Farcy.

THE farcy generally appears in the form of small tumours, or buds (as they are commonly termed), frequently in the course of the veins, from which they are erroneously supposed to consist in a swelling of those vessels. These tumours generally burst, discharging a thin watery matter, and degenerating into foul spreading ulcers. The contiguous glands are usually inflamed and swollen from an absorption of the poison. This disease sometimes makes it's appearance in diffused swellings of the hind legs, or other parts of the body. The most common cause of farcy appears to be contagion, either from a glandered or farcied

horse, for there can be no doubt that these diseases *will reciprocally produce each other*; whence we may conclude that they *both* originate from the operation of the *same poison*, which produces different effects, according to the parts on which it's noxious influence is exerted.

There being certain parts only of the body which are obnoxious to this poison, it's effects are always partial in some degree: thus we find the internal parts of the nose particularly liable to be affected by it: the skin likewise is very susceptible of it's action; and when the horse is suffered to live a sufficient time for the poison to acquire it's highest degree of virulence, or to produce it's full effect, the lungs do not escape the contagion. The farcy may be either constitutional or local: if glanderous matter, or the matter taken from a farcy ulcer, be applied to the skin where the cuticle has been torn or abraded, a chancre, or foul ulcer, is produced; which may easily be distinguished from all others by it's peculiarly foul appearance, the edges becoming thick, and the discharge consisting of a thin and rather glutinous matter. It generally spreads rapidly, and never looks red or healthy. The absorbents or lymphatics about the ulcer become inflamed and swollen from an absorption of it's poisonous matter. The swellings produced in this way are commonly

mistaken for veins, and hence has arisen the opinion of the blood vessels being the seat of the disease: the glands, likewise, to which those lymphatics lead, become inflamed and enlarged: at length small tumours, or *buds*, appear in the course of these absorbents, which are small abscesses arising from the inflammation of these vessels.

Thus far the disease is certainly *local*, and the constitution untainted, the poison being arrested by the glands, and, for a time, prevented from mixing with the blood; at length, however, it insinuates itself into the circulation, and poisons the whole mass. Those parts which are susceptible of it's action will then be affected, though at different periods. The internal parts of the nose are generally the first to be attacked: that delicate membrane by which they are lined becomes inflamed and ulcerated, discharging large quantities of matter. The next part which is affected is generally the skin, on various parts of which *farcy buds* (as they are termed) make their appearance, and degenerate into foul spreading ulcers; at length the bones of the nose become carious, or rotten; and finally the poison falls upon the lungs, and very soon puts a period to the sufferings of the unfortunate animal. Sometimes the progress of the disease is extremely rapid, and

destroys the horse in a very short time; at others it is remarkably slow, and continues in the same state for a considerable time, without affecting either the appetite or strength.

In the first stage of the farcy, while it is perfectly local, a cure may be easily accomplished; and, should the disease be discovered quite at it's commencement, topical applications alone will be sufficient to remove it. If, indeed, the actual cautery be *freely* applied at this time, so as to destroy the whole of the poisoned parts, the disease will be *completely eradicated*, and the chancre converted to a common sore. This will soon be evinced by the remarkable change that may be observed in it's appearance: as soon as the slough comes off, instead of looking foul, it will have a red healthy appearance, the matter will become white and thick, the healing process goes on rapidly, and the cure is soon completed merely by the application of digestive ointment. Should the disease, however, have been neglected, or not perceived at it's commencement; should the lymphatics be enlarged or *corded* (as it is termed by farriers), and the neighbouring glands swollen, the cure is by no means so certain. In this case, some of the poison may have got into the circulation, though it's effects have not been visible. Even in this stage, however, the *chancre* may be

completely cured by the actual cautery, or other strong caustics; and, if the poison should not have passed the glands, the cure will be radical—but if, on the contrary, the smallest portion of the poison should have insinuated itself into the blood, the whole mass will be poisoned, and the symptoms we have before described will successively take place.

Whenever, therefore, the farcy has been neglected at it's first appearance, it will be advisable to give the following ball, once, twice, or even three times a day, if the horse's strength will admit of it, taking care to restrain it's inordinate effect upon the bowels or kidneys by means of opium: at the same time it is necessary to keep up the horse's strength by a liberal allowance of corn. Malt has been found useful also on these occasions. During the time the horse is taking this strong medicine, great attention must be paid to him; he must be warmly clothed, have regular exercise, and never be suffered to drink cold water. Verdigris has been much recommended in this disease, but I have never had an opportunity of seeing it's effect. (See *White's Veterinary Materia Medica*, &c.)

It seems probable that the farcy, as well as the glanders, arises sometimes spontaneously, though not so frequently as it is supposed. I have seen

many cases where the disease could not be traced to any source of infection. Still, however, it might have arisen from contact with poisonous matter; for it is not necessary that the matter should be conveyed immediately from one horse to another, in order to produce the disease; which is often communicated by means of matter deposited upon the manger, or litter, or about the rack; and not improbably sometimes conveyed by the hands of those who have the management of such horses, through inattention or negligence.

With respect to that kind of farcy which appears in the form of diffused swellings of the limbs or other parts, I believe it seldom originates from infection, and does not often depend perhaps on the action of the glanderous poison, being merely common œdematous swellings, such as accompany the grease. From this we may account for the efficacy that has sometimes been attributed to purgatives and diuretics, as remedies for the farcy. It has been said that the grease sometimes degenerates into farcy, and becomes contagious; but this I have never seen.

When large abscesses form in consequence of farcy, they do not require any peculiar treatment; but it is particularly necessary to support the horse's strength in these cases, by means of corn and malt. It has been supposed, that the farcy

depends altogether upon debility; and medicines of the tonic or strengthening kind have been recommended for it's removal.

Muriate of quicksilver . . .	1 sc.
Powdered aniseeds	½ oz.

Sirup enough to form a ball.

The quantity of muriate of quicksilver may be gradually increased as far as the horse's strength will allow*. When violent sickness, purging, or excessive staling is produced by it, it will be advisable either to discontinue it for two or three days, or to diminish the dose considerably. One dram of opium will sometimes prevent such violent effects.

* Consult the author's Materia Medica, or second volume (article *Muriates*), in which the properties of this medicine are more fully explained.

CHAPTER IV.

Wounds.

THE first necessary operation in wounds is to remove carefully all dirt or other extraneous matter; and, if the wound be made with a clean cutting instrument, and not complicated with bruising or laceration, the divided parts are to be neatly sewed together. Where it can be done, a roller kept constantly moist with the saturnine lotion, diluted with an equal quantity of water, is to be applied, in order to assist in retaining the parts in their situation. This roller is not to be removed for several days, that the divided parts may have time to unite, and that the wound may heal by the first intention, as surgeons term it, unless considerable swelling and inflammation come on: it then becomes necessary to remove the roller, and apply fomentations. This kind of union, however, can seldom be accomplished in horses, from the difficulty of keeping the wounded parts sufficiently at rest, and from their wounds being generally accompanied with contusion or laceration; yet it should be always attempted where it appears at all practicable. Fomenta-

tions and warm digestives then become necessary, in order to promote the formation of matter in the wound. Should considerable swelling and inflammation arise, moderate bleeding near the affected part, and a laxative medicine, or even a dose of physic, are strongly to be recommended; and a poultice, if the situation of the part be such as to admit of it's application, will be found of great use. As soon as the swelling and inflammation shall have been removed, the fomentations and poultice are no longer necessary, and the digestive ointment only is to be applied: should the wound appear not disposed to heal, discharging a thin offensive matter, apply the detergent lotion previous to the digestive ointment. When the granulations become too luxuriant, that is, when what is commonly termed proud flesh makes it's appearance, the caustic powder is to be sprinkled on the wound.

Slight wounds generally heal with very little trouble, and sometimes without the interference of art; and it is from this circumstance that many nostrums have acquired unmerited reputation. In wounds of this kind, tincture of myrrh, or compound tincture of benzoin, may be used.

Whenever a considerable blood vessel is wounded, and the hemorrhage is likely to prove troublesome, our first object is to stop the bleeding;

which, if the wound be in a situation that will admit of the application of a roller or bandage, may be easily effected; for pressure, properly applied, is generally the best remedy on these occasions, and far more effectual than the most celebrated styptics. In some cases, it becomes necessary to tie up the bleeding vessels: this is rather a difficult operation, and not often necessary.

Punctured wounds, or such as are made with sharp-pointed instruments, are generally productive of more inflammation than those that have at first a more formidable appearance; and, if such wounds happen to penetrate into a joint, or the cavity of the chest or belly, the worst consequences are to be apprehended, unless they be skilfully treated.

When a joint has been wounded, the synovia, or joint oil, may be observed to flow from the wound. The first thing to be done in these cases is to close the opening that has been made into the joint; for, as long as it remains open, the inflammation will go on increasing, and the pain will be so violent as to produce a symptomatic fever, which often proves fatal. The most effectual method of closing the wound is by applying the actual cautery: this will appear probably a very strange remedy to those who have not seen it's effect, yet it is certainly the most efficacious that

can be employed, although only applicable where the wound is of the punctured kind, and small; for when a large wound is made into the cavity of a joint, and particularly if it be of the lacerated kind, it is impossible to close it effectually, and death is frequently the consequence. As soon as the opening has been closed, it is of importance to guard against the inflammation that may be expected to arise, or to remove it if already present. For this, bleeding and purging are the most effectual remedies. A rowel in any convenient part near the affected joint will be found useful also. Should the joint be much swollen; the blister N° 2 will prove very efficacious, and far superior to fomentations or poultices.

Wounds about the foot, from stubs, overreaching, &c., often prove troublesome when neglected. As soon as they are perceived, care should be taken that no dirt gets into them: the detergent lotion and digestive ointment are the most useful applications on these occasions. (See *Pharmacopaia*.) When the foot is wounded in shoeing, the nails being driven into the sensible parts, the compound tincture of benzoin is to be applied. When their tendons or their membranes are wounded, considerable inflammation is likely to take place, which is to be removed by fomentation and the saturnine poultice: purging is also

of great use in these cases; and, when the wound is large, and inflammation runs high, bleeding likewise may be necessary.

In extensive, lacerated, or contused wounds, the inflammation sometimes terminates in mortification. (See *Inflammation.*) In such cases fomentations are to be applied frequently, and the horse's strength supported by means of malt, and the cordial ball for mortification. (For the method of treating the different kinds of wounds, see the *Appendix.*)

Bruises.

In recent bruises, fomentations are the most essential remedies. When they are violent, a considerable degree of inflammation may be expected to supervene: it will then be proper to give a laxative ball, and to bleed moderately near the affected part.

If abscesses form in consequence of a bruise, discharging large quantities of matter, particularly if the matter be of a bad colour and an offensive smell, the wound also appearing dark coloured and rotten, indicating approaching mortification, the horse's strength must be supported

by allowing him a large quantity of corn: and, if he can be made to eat malt, it will be found still more effectual. If the appetite go off, he must be drenched with good water-gruel, and strong infusion of malt: it will be necessary also to give the cordial ball for mortification once or twice a day. Stimulating applications to the part, such as equal parts of camphorated spirit and oil of turpentine, are of great use.

Should a hard callous swelling remain in consequence of a bruise, the following embrocation is to be well rubbed into the part twice a day; and, if it do not succeed in removing it, recourse must be had to a blister.

EMBROCATION FOR BRUISES.

N° 1.

Camphor	½ oz.
Oil of turpentine . . .	1 oz.
Soap liniment	1½ oz.

Mix.

N° 2.

Tincture of cantharides .	1 oz.
Oil of origanum	2 dr.
Camphorated spirit . . .	6 dr.

Mix.

N° 3.

Muriate of ammonia . .	1 oz.
Distilled vinegar . . .	8 oz.
Spirit of wine	6 oz.

Mix.

Broken Knees.

THE method of treating this accident is described generally under the article *Wounds*, being nothing more than a contused and lacerated wound; but as it occurs frequently, and, if not skilfully treated, greatly lessens the value of a horse, it may not be amiss to be more particular on the subject. The first thing to be done is to cleanse the wound perfectly; and if it be at all deep or extensive, or much bruised, a goulard poultice is to be applied, by means of the leg of a worsted stocking, taking care to renew it twice a day, that it may be constantly soft and moist. This, in two or three days, will give the wound a healing appearance, and cause a white healthy matter to flow: it may then be discontinued, and the digestive ointment applied. Should the matter assume a bad appearance, losing it's white colour, becoming thin, and smelling rather offen-

sively, something stronger will be requisite, such as the detergent lotion, made hot; and if, after this, the new flesh grow too luxuriantly, rising above the skin, apply the caustic powder, and a considerable degree of pressure, by means of a linen roller or bandage, and a bolster of lint. By this treatment the wound will soon heal. But we must not stop here; for unless the swelling is completely removed, and the hair regenerated of it's original colour and smoothness, the horse would be considered of very little value. As soon, therefore, as the wound is completely healed, if any swelling be discernible, apply the following liniment, so as to excite a moderate degree of vesication, or blistering, and repeat it after this effect has perfectly subsided. Should the swelling feel hard and callous, and be of considerable size, the strong blister, N° 1 or N° 2, will be preferable. (See Index, *Blisters*.)

THE LINIMENT.

Powdered cantharides . .	2 dr.
Camphor	½ oz.
Spirit of wine	4 oz.

Mix them in a bottle, and let it stand in a warm place about a week or ten days, shaking the bottle

frequently; then strain through blotting paper, and it is fit for use.

It often happens, after the wound is perfectly healed, that a small scar or mark will be observable; and, though the part may be free from any hardness or swelling, the value of the horse will be greatly lessened by this appearance. A variety of ointments have been recommended for promoting the growth of hair on the part, and thereby removing the blemish: the following I have found more effectual than any of them.

OINTMENT FOR BROKEN KNEES.

Ointment of wax. . . .	2 oz.
Camphor	2 dr.
Oil of rosemary	1 dr.

Mix.

The colour of this ointment should be suited to that of the contiguous hair, which will so conceal the blemish, that it will not be observed, unless the part is strictly examined; and, at the same time, the ointment will cause the hair to grow up gradually, until the mark is completely removed. If the horse be of a bay colour, the legs and knees are generally blackish. In this

case, mix a little ivory black with the ointment: if a chesnut colour, Armenian bole may be mixed with it.

Fistula in the Withers.

This disease generally originates in a bruise from the saddle, and is at first simply an abscess, which, by early attention and proper treatment, may be easily cured; but when neglected, it degenerates into a fistulous sore, proves extremely difficult of cure, and cannot be removed without very severe treatment.

As soon as the injury is discovered, fomentations should be applied in order to promote suppuration; and when the matter is formed, let the tumour be opened, so that it's contents may be completely evacuated, and a future accumulation prevented. The sore may then be healed by dressing it daily with digestive liniment or ointment; but should these prove ineffectual, apply the detergent lotion until the sore assumes a red healthy appearance, and the matter becomes whiter, and of a thicker consistence. When the disease has been neglected in it's first stage, and the matter suffered to penetrate among the

muscles, affecting the ligaments or bones of the withers, it becomes *necessary* to adopt a more severe treatment.

The sinuses, or pipes, are to be laid open with a knife; and, if it be practicable, a depending opening is to be made, that the matter may run off freely: the sore is then to be dressed with the following ointment, which is to be melted, and poured into the cavity while very hot.

The sore is not to be dressed until the sloughs, which this ointment occasions, have separated from the living parts; which generally happens two or three days after the operation. If the surface of the sore look red and healthy, and the matter appear to be whiter and of a better consistence, a repetition of this painful operation will not be required, the digestive liniment or ointment being sufficient to complete the cure; but should the sore still retain an unhealthy appearance, and the matter continue thin and of a bad colour, the hot dressing must again be applied.

THE OINTMENT.

N° 1.

Ointment of nitrated quicksilver	4 oz.
Oil of turpentine	1 oz.

Mix.

N° 2.

Verdigris.	½ oz.
Oil of turpentine	1 oz.
Ointment of yellow resin . .	4 oz.

Mix.

N° 3.

Oil of turpentine	2 oz.
Vitriolic acid	1 oz.

Mix cautiously in an earthen vessel, placed in a current of air, that the suffocating vapour which arises may be carried off. When they are perfectly incorporated, add

Common turpentine and hog's lard, of each	2 oz.
Bees wax	1 oz.

To be melted over a gentle fire.

This ointment may be made either stronger or weaker, by increasing or diminishing the proportion of vitriol and turpentine.

Poll Evil.

This disease also generally originates in a bruise, and requires the same treatment as the

fistula. It consists at first in an abscess in the poll, which, by early attention, might be easily cured; but if the matter be suffered to penetrate to the ligaments and bones, it frequently proves more difficult of cure than the fistula in the withers, and cannot be subdued without those strong remedies we have recommended in that disease*.

* Since writing the above, I have discovered, that the inflammation which produces poll evil does not begin, as is usually the case in other parts, on the surface, or in the cellular membrane under the skin, but between the ligament of the neck and the bones. When we consider the weight and position of the horse's head, with the great length of the neck, it will readily appear, that the muscles alone are not capable of supporting and moving so great a weight, under such mechanical disadvantages. Nature has therefore provided a strong ligament, which is firmly fixed to the back part of the head, whence it passes down over the bones of the neck. It is not attached to the first bone, but is firmly fastened to the three next: it then passes over the three other bones of the neck in nearly a straight line to the withers, where it is securely fixed, giving off a thin slip of ligament in it's passage, which is united to the last three bones. It is continued from the withers to the back. This ligament, being elastic, allows of sufficient motion in the neck, and so effectually assists the muscles in supporting the head, that they never become fatigued.

When a horse receives a violent blow on that part of the poll which covers the first bone of the neck, which, as we have just observed, is not attached to the ligament, the injury will be sustained chiefly by the sensible parts placed

Mr. Taplin, in his Stable Directory, very pompously declaims against this method of treating inveterate cases of fistula and poll evil. It is cer-

between the bone and the under surface of the ligament. The skin may also be hurt, and a slight degree of superficial inflammation may take place. But when inflammation has been thus produced between the bone and the ligament, it is more likely to proceed to suppuration, or to the formation of matter; which, being so deeply seated, cannot find vent at the surface, by bursting the skin like a common abscess; therefore it spreads under the ligament, and is so long in arriving at the surface, that both the bones and ligament are highly diseased before any external swelling is observed. This is the cause of the particular obstinacy of the poll evil, and the great length of time generally required to cure it. From this we may learn, also, how little is to be expected from such applications as are intended to disperse the swelling, and how necessary it is to adopt a bold and powerful mode of treatment. I am convinced, from what I have seen, that it is almost impossible to disperse the genuine poll evil; that by attempting it we lose time, and suffer the matter to continue it's ravages upon the ligament and bones; and that the only effectual practice consists in opening the abscess freely, so that the matter may readily escape, and the diseased bones be examined. When this has been done, and bleeding has perfectly ceased, apply the ointment, No 3, described in the preceding chapter, and let the first dressing remain until the dead parts are ready to separate merely by washing. It is sometimes necessary to repeat this application several times; and should it appear not sufficiently active, the proportion of vitriol and turpentine may be increased; but in irritable blood-horses it will sometimes prove too strong. A second operation often becomes

tainly, however, the only effectual one that is known; and had this verbose author but seen the effect of this remedy, as well as of that which he recommends himself, before his book was written, it is probable he never would have favoured the public with the declamation above alluded to. It is surely more consistent with humanity to rescue an animal from a painful and gradually increasing disease, by means of a severe operation, than to suffer him to linger out a life of pain and misery, by adopting a mild but ineffectual mode of treatment.

Saddle Galls, or Warbles.

THESE consist of inflamed tumours, and are produced by the unequal pressure of the saddle. If neglected, they become troublesome sores, and are often a considerable time in healing. As soon as a swelling of this kind is observed, let several folds of linen be moistened with one of the follow-

necessary, particularly if the matter have not been boldly performed; and whenever the matter appears to be sent up, or confined in sinuses, the knife and strong dressings are the only remedies. When the wound has been brought to a healthy state, the common digestive is the best dressing.

ing embrocations, and kept constantly applied to the tumour until it is reduced; but if matter have been allowed to form, let it be opened with a lancet, and afterward dressed with digestive liniment or ointment. Should it appear not to heal readily under this treatment, apply the detergent lotion made hot. When swellings of this kind are large and much inflamed, it will be advisable to bring them to suppuration as expeditiously as possible, by means of fomentations or poultices. Should a hard swelling remain after the inflammation is in great measure removed, try the embrocation for strains; and, if this do not succeed, recourse must be had to a blister.

THE EMBROCATION.

N° 1.

Water of acetated litharge . .	2 dr.
Distilled vinegar	3 oz.
Spirit of wine	4 oz.

Mix.

N° 2.

Muriate of ammonia	½ oz.
Muriatic acid	2 dr.
Water.	from 8 to 12 oz.

Mix.

N° 3.

Soap liniment, and water of acetated ammonia, of each	2 oz.

Mix.

Sitfasts

Are occasioned by repeated bruises from the saddle, which, instead of inflaming the skin, as most commonly happens, cause it to become callous, and give it somewhat the appearance of leather. The following ointment is to be applied until the callous part appears disposed to separate: it is then to be removed, which generally requires some force, and the sore which remains may be healed with digestive liniment or ointment. The sore may be washed now and then with weak detergent lotion, if it appear indisposed to heal.

OINTMENT FOR SITFASTS.

Ointment of althea	4 oz.
Camphor	2 dr.
Oil of origanum	1 dr.

Mix.

Strains.

This is a subject with with every sportsman ought to be well acquainted, since his horses are particularly liable to such accidents. Strains may affect either the muscles, ligaments, or tendons. Muscular strains consist in an inflammation of the muscles or flesh, occasioned by violent and sudden exertion. When ligaments are the seat of this disease, there is generally some part of them ruptured, whereby very obstinate and sometimes permament lameness is produced: in this case, also, inflammation is the symptom which first requires our attention. But tendons are the parts most frequently affected, particularly the flexors of the fore leg, or back sinews, as they are commonly termed. Tendinous strains are commonly supposed to consist in a relaxation or preternatural extension of the tendon; and the remedies that have been recommended are supposed to brace them up again. However plausible this opinion may be, it certainly is very erroneous: indeed it has been proved by experiment, that tendons are *neither elastic nor capable of extension*; and, from investigating their structure and economy, we learn, that, were they possessed of these qua-

lities, they would not answer the purpose for which they were designed. From an idea that a strain in the back sinews depends on a relaxation of the tendons, many practitioners have been apprehensive of danger from the use of emollient or relaxing applications, than which nothing can be more useful at the beginning of the disease.

Tendinous strains consist in an inflammation of the membranes in which tendons are enveloped; and the swelling which takes place in these cases depends on an effusion of coagulable lymph by the vessels of the inflamed part. Inflammation being the essence of a strain, we are to employ such remedies as are best calculated to subdue it; and should any swelling remain, it is to be removed by stimulating the absorbent vessels to increased action.

Strain of the Shoulder.

This disease is by no means so frequent as it is supposed to be, lameness in the feet being often mistaken for it: the difference, however, is so well marked, that a judicious observer will never be at a loss to distinguish one from the other.

A shoulder strain is an inflammation of some

of the muscles of the shoulder, most commonly, I believe, those by which the limb is connected with the body. The lameness which this accident occasions comes on rather suddenly, and is generally considerable. When the horse attempts to walk, the toe of the affected side is generally drawn along the ground, from the pain which an extension of the limb occasions: in violent cases, he appears to be incapable of extending it.

When lameness arises from a disease of the foot, it is generally gradual in it's attack, unless occasioned by an accidental wound, and does not at all hinder the extension of the limb: an unusual heat and tenderness may also be perceived in the foot; and, as the horse stands in the table, the affected foot will be put forward, that it may bear as little as possible of the weight of the body.

The first remedy to be employed on these occasions is bleeding in the shoulder or plate vein; then give a laxative ball; and, if the injury be considerable, let a rowel be put in the chest. By means of these remedies and rest, the disease will generally be removed in a short time; a cooling, opening diet, with perfect rest, will also be necessary. When the inflammation and lameness

begin to abate, the horse should be turned into a loose stall, and, after a week or two, he may be suffered to walk out for a short time every day: but should this appear to increase the lameness, it must be discontinued. The intention of moderate exercise, after the inflammation is in great measure subdued, is to effect an *absorption* of any *lymph* that may have been effused, and to bring the injured muscles gradually into action.

After an accident of this kind, particularly when it has been violent, the horse should not be worked in any way for a considerable time, as the lameness is very apt to recur, unless the injured parts have had sufficient rest to recover their strength. If he can be allowed two or three months' run at grass, it will be found extremely conducive to his recovery, provided he is prevented from galloping or exerting himself too much when first turned out. It is necessary also to choose a situation where there are no ditches in which he may get bogged. With respect to embrocations, and other external applications, they are certainly useless, unless the *external* parts are affected; and then fomentations may be employed with advantage.

Strain of the Stifle.

In this case the stifle joint will be found unusually hot, tender, and sometimes swollen. The remedies are fomentations, a rowel in the thigh, and a dose of physic. When by these means the inflammation of the joint has abated considerably, and at the same time the swelling and lameness continue, the embrocation for strains, or a blister, should be applied.

Strains in the hock joint require the same treatment.

Strain of the Hip Joint (commonly termed Whirl Bone, or Round Bone).

When lameness occurs in the hind leg, the cause of which is too obscure for the farrier's comprehension, he generally pronounces it to be a strain in the round or whirl bone, and with all that affectation of infallibility so commonly observed in those gentlemen. I have seen several cases of lameness which were supposed to be occasioned by an injury of this part, but, after attentive examination, an *incipient* spavin was found

to be the cause. I would advise, therefore, in such cases, that the hock joint be carefully examined; and, if unusual heat or tenderness be observed on the seat of spavin, it is probable that the lameness arises from this cause, and that it may be removed by the application of a blister. I have met with several horses that had been severely burnt and blistered in the hip, when the hock was evidently the seat of the disease.

Strain of the Flexor Tendon, or Back Sinew.

A STRAIN of the back sinew depends, as we have before observed, on an inflammation of the membranes in which it is enveloped*, and is sometimes complicated with a rupture of the ligaments which are situate immediately under the sinews†. When the lameness and swelling are considerable, bleed in the shoulder vein, and give a dose of physic; then let the saturnine poultice be applied, so as to extend from the hoof to the knee, and let it be frequently moistened with the saturnine lotion. When the inflammation and

* See plate ix, *aaa* the back sinew, *bb* the membranes.

† See plate x.

lameness have abated considerably, and a swelling still remains, apply the embrocation for strains, rubbing it well on the part twice or three times a day. If this do not succeed, recourse must be had to a blister. It will be advisable also to turn the horse loose into a large stable or barn, and to give him this kind of rest for a considerable time: should he be worked too soon after the accident, the part is very liable to be injured again, particularly when it has been violent. Should the swelling continue, notwithstanding these remedies have been carefully employed, particularly if it feel callous and hard, and be perfectly free from inflammation, it will be necessary to apply the actual cautery (see *Firing*): this operation, however, must never be performed while any inflammation remains. These swellings sometimes prove so obstinate, that even repeated blistering and the actual cautery are ineffectual; as soon, however, as the inflammation which caused them is completely removed, they seldom occasion lameness, yet they will not admit of any violent exertion in the part, and are therefore always an impediment to speed.

SATURNINE LOTION.

Acetated lead	4 oz.
Vinegar and water, of each . .	1 pint.

Mix.

SATURNINE POULTICE.

Fine bran	½ peck.

To be made into a thin paste with hot saturnine lotion: to this add as much linseed-meal as will give it a proper consistence.

EMBROCATION FOR STRAINS.

N° 1.

Oil of rosemary and camphor, of each	2 dr.
Soft soap	1 oz.
Spirit of wine	2 oz.

Mix.

N° 2.

Soft soap, spirit of wine, oil of turpentine, and ointment of elder, of each	4 oz.

Mix.

Ring-bones

ARE bony excrescences about the small pastern bone, near the coronet, or an ossification of the cartilages of the foot. (See *Anatomy of the Foot*, and plate v, fig. 1, and plate vii.) If observed in it's incipient state, a blister will probably be of service; but when of longer standing and large, the actual cautery will also be necessary. This remedy, however, is by no means uniformly successful, the complaint being frequently incurable; and, if it have proceeded so far as to cause a stiff joint, there is no chance of recovery.

Thorough-Pin.

BY this term is meant a swelling both on the inside and outside of the hock joint. When one of the tumours is pressed with the fingers, the fluid which it contains is forced into that on the opposite side. From this communication between the two swellings, the disease has probably obtained it's name.

It is generally a consequence of hard work, and therefore difficult to cure: the only remedies are blisters and rest.

Windgalls

Consist in an enlargement of the mucous sacs, which are placed behind the flexor tendons for the purpose of facilitating their motion. The swelling appears on each side the back sinew, immediately above the fetlock joint. If punctured, they discharge a fluid resembling joint oil; indeed they frequently communicate with the cavity of the joint, and therefore cannot be opened without danger of producing an incurable lameness. Blisters are the only applications likely to be of service, and these seldom effect a cure unless assisted by rest. This complaint does not often occasion lameness, and is therefore seldom much attended to; but as it is almost always a consequence of hard work, and often renders a horse unfit for much labour, it diminishes his value considerably.

I have sometimes applied rollers or bandages to the legs with good effect, keeping them constantly moist with the following embrocation:—

Muriate of ammonia . .	1 oz.
Muriatic acid.	½ oz.
Water	1 quart.

Mix.

Splents

ARE bony excrescences about the shank bone, *i. e.* between the knee and fetlock joint; they never occasion lameness, unless situate so near the knee or back sinews as to interfere with their motion.

I have met with several cases of lameness that were attributed to splents, when the cause evidently existed in the foot.

These excrescences may sometimes be removed by strong blisters; but the old method of bruising and puncturing the part before the blister is applied seems to be the most effectual.

Spavin.

A SPAVIN is a swelling on the inside of the hock, and is of two kinds: the first is termed a *bone* spavin, consisting of a bony excrescence;

the other a *bog* or *blood* spavin. The former often occasions lameness just before it makes it's appearance, and then can be discovered only by feeling the part, which will be found unusually hot and tender. If a blister be applied at this period of the disease, it will generally prove successful; but when the disease has existed for some time, the cure is much more difficult. In such cases the actual cautery should be applied, and the following day a strong blister: after this, two or three months' rest (at grass) is absolutely necessary.

The *bog* spavin does not so often occasion lameness as the other, except when a horse is worked hard, which generally causes a temporary lameness, removable by rest; but it does not often admit of a *radical* cure; for though it is frequently removed by two or three blisters, it generally returns when the horse is made to perform any considerable exertion.

Tying up the vein which passes over the inside of the hock has been considered the most effectual remedy, from a supposition that the lameness was caused by an enlargement of that vessel: this operation, however, cannot be necessary, since it has been proved that the enlargement of the vein is always an *effect*, and not a *cause* of the disease.

Curb.

This term implies a swelling on the back part of the hock, which sometimes occasions lameness. Blistering and rest are the only remedies: it is frequently necessary, however, to apply two or three blisters before the swelling is perfectly reduced.

CHAPTER V.

Anatomy and Physiology of the Foot.

OF all the diseases to which horses are liable, there are none more difficult of cure, or that occur so frequently, as those which attack the foot; and, however improbable it may appear to those who have not paid much attention to this subject, it is an incontrovertible fact, that almost all of them are the consequence of bad shoeing, and improper management of the foot.

No one can be aware of the importance of this branch of the veterinary art, but he who has had frequent opportunities of seeing these diseases, and has taken the trouble to inquire into their causes. Such a man will be convinced, that nearly half of the horses that become unserviceable are rendered so by some defect in the feet; and he will find that such defects are most commonly occasioned by a bad method of shoeing; therefore, it must surely be of importance to every man who values his horse, to acquire such a knowledge of this subject, as may enable him to preserve so useful an animal from a multitude of diseases.

The bad effects which arise from the common



THE BOTTOM OF THE SENSIBLE FOOT

practice of shoeing are so gradual, that we can easily account for their having been generally overlooked: the gradations between soundness and absolute lameness are so numerous, that it has been found rather difficult to trace the disease back to it's source; and this cannot be done readily without having some knowledge of the structure of the foot, and the particular uses of the various parts which compose it. It is necessary also to be well acquainted with the natural form of the foot, in order to determine how far it has been altered or destroyed by any plan of shoeing. For example, take a horse that has a sound well-formed foot, let it be improperly pared, and let bad shoes be applied; in all probability, lameness will not be the immediate consequence. By a repetition, however, of this practice, it will be found that the original shape of the foot is gradually altered, and eventually it will be so far deformed, as to produce perhaps incurable lameness; therefore, we ought not to be satisfied with a plan of shoeing, merely because a horse is not immediately made lame by it, but should examine also the effect produced by it upon the shape and structure of the foot; and this rule may invariably be depended on, that any mode of shoeing and treating the foot, which has a tendency to alter the form given to it by Nature, is highly absurd and de-

structive; while that practice which tends to preserve it's original form is founded upon sound and rational principles.

It has been very justly observed, that if we wish to examine a perfect foot, such as Nature made it, it is generally necessary to find one that has never been shod; for the common mode of shoeing is so frequently destructive, that we seldom meet with a horse whose feet have not lost, in some degree, their original form; and this deviation from their natural shape is generally proportioned to the length of time he has worn shoes. From this circumstance, writers on farriery have been led to form various opinions respecting the most desirable form for a horse's foot; but had they consulted NATURE, this variety of opinion would not have existed: they would have been convinced that the feet of all horses in a state of nature, or not improperly shoed, are nearly of the same shape; and surely no one will dispute that this form, which the Creator has given it, is the most perfect, and far better adapted to all the purposes for which the animal was designed, than any that can be given by the most ingenious farrier.

A person unacquainted with the anatomy of the horse's foot would naturally suppose, that the internal parts are simply enclosed by the hoof, and

that, by it's hardness, it served to protect them from the blows and pressure to which they would otherwise be constantly exposed; but very little reflection would convince him how incomplete and inadequate such a protection would be. Let him be convinced that those internals parts are replete with blood vessels and nerves, and possessed of a high degree of sensibility; let him consider, also, what an immense weight is thrown upon them at every step, and what painful concussion must be occasioned to the animal, were this the only safeguard against external injury. Nature, ever provident, has so constructed this part, as to obviate these inconveniences. If we examine any part of the animal economy, we are astonished at the infinite wisdom that is displayed in it. It is not, however, too much to assert, that the structure of the horse's foot is strikingly beautiful and curious: here we find a variety of wonderful contrivances to prevent any painful concussion, from carrying heavy burdens, or from the most violent exertions; but such is the folly and obstinacy of farriers, that they frequently destroy or pervert the whole of this beautiful mechanism, and the poor animal is doomed to painful labour, or perpetual lameness.

It would not be consistent with the objects of this chapter, to give an elaborate description of

the anatomical structure of the horse's foot; but it will be essentially useful to give such an explanation of it, as will enable the reader fully to comprehend the principles of shoeing, and the method of preserving the feet from many troublesome and incurable diseases.

The horse's foot is made up of a great variety of parts, some of them possessing blood vessels and nerves, like other parts of the body, and highly sensible: others are composed of a dead horny substance, perfectly destitute of feeling. All the *external* parts of the foot, which when taken together, are termed the *coffin*, or *hoof*, are composed of this horny substance; which is not only very hard, but is possessed also of a considerable degree of toughness and elasticity, that render it extremely durable, and well calculated to protect the sensible parts which it encloses.

The hoof consists of the *wall* or *crust*, the *sole*, the *frog*, and the *bars*. The upper part of the crust, where it is connected with the skin, is termed the *coronet*; the lower part in front, the *toe*; the sides of the crust are named the *quarters*; the quarters terminate in the *heels*; and the heels are connected with the frog. The crust grows from the coronet, and, instead of taking a perpendicular direction, becomes oblique in it's descent, whereby it acquires a conical figure,

being considerably wider at the basis than at the coronet. This description of the hoof applies only to the healthy foot, that has not been improperly treated; for, when the bars have been cut away, and the frog mutilated and prevented from receiving pressure, the heels will contract or approach each other, and the shape of the foot will be considerably altered.

When we examine a hoof that has been recently separated from the foot, an immense number of small orifices, or pores, may be observed in that groove which is found on the inside of the coronet. Into these orifices the extremities of those vessels are inserted which secrete the horny matter, the whole of which appears to be pervaded by a fine fluid, serving to prevent brittleness, and to preserve in the hoof a proper degree of elasticity.

All the internal surface of the crust, except the groove we have just mentioned, is covered by a beautiful membranous or laminated substance, which very much resembles the under surface of a mushroom. This is united, or rather interwoven, with similar laminæ, or membranes, which cover all the anterior or lateral surfaces of the sensible foot, forming a very secure union between the crust and the internal parts. Nor are these membranes possessed merely of great

strength: they possess likewise a considerable degree of elasticity, constituting one of those curious springs which Nature has provided to prevent concussion when the animal is in motion. That these laminæ form a union between the crust and sensible foot, of sufficient strength to support the animal's weight, has been proved beyond all doubt, by removing from a living horse the bottom of the hoof, that is, the sole and frog. In this case, had the laminæ been unable to support the horse's weight, the internal foot must have slipped through the hoof, so as to come down upon the ground: but this did not happen; and the sole, as it was reproduced, assumed it's proper concave form.

As these laminæ form so secure a union between the crust and the internal foot, it is evident that the weight of the horse is in great measure supported by the crust, which therefore ought to possess considerable strength; for if it were too weak and flexible, it would not be adequate to the burden which it has to sustain, and must consequently bend to it. In this case, the hoof would lose that oblique form which it had originally, and would approach the horizontal line. (See fig. 1 and 2, plate iii.) At the same time, the sole would lose it's concave form, from receiving an unusual degree of pressure, becoming

flat, and at length convex or projecting. (See fig. 2, plate ii.) But when the crust is sufficiently strong, the internal foot, and consequently the whole animal, is suspended by those elastic membranes, as a carriage is by it's springs; and though the bottom of the internal foot is in contact with the sole, it nevertheless does not press upon it considerably, except when the horse is in motion, and then the back part of the sole descends a little, being somewhat elastic, and suffers the lamina to elongate in a small degree, so as to prevent any painful concussion.

The bottom of the hoof is formed by the SOLE, the FROG, and the BARS.

The *sole* is rather concave, or hollow, on it's external surface, and consists of a different kind of horn from that which forms the crust, being of a scaly texture, and sometimes soft and pulverable on it's exterior surface: it's use is to defend the sensible sole, that lies immediately under it. From it's concave form, the horse is enabled to tread more firmly on the ground, and the sensible parts are less exposed to blows or pressure than they would be, had it been made either flat or convex; and, being somewhat flexible and elastic toward the heels, it assists in the action of those curious springs we have just described.

The *frog* is a very important part, and requires

to be particularly considered. It is intimately united with the sole, but is composed of a tougher and more elastic kind of horn. It resembles a wedge in it's form; but towards the heel, where it becomes wide and expanded, there is a separation in the middle, which is continued to the heel. When the frog receives the pressure of the horse's weight, this separation is increased, and consequently the frog becomes wider; and, as it is connected with the heels of the crust, the same effect must be produced upon them.

As great part of the frog is placed behind the coffin bone, all the intervening space between it and the back sinew being filled with a fatty elastic substance, it forms another of those curious springs which Nature has provided to prevent concussion.

When the frog is in contact with the ground, it is evident, from it's connexion with the heels of the crust, as we have before observed, and with two cartilages, or elastic bodies, which are covered, in great measure, by the heels and quarters of the crust, and belong to the internal foot, that it must tend to widen or expand the heels; and, however they may be disposed to contract, by the foot being kept hot and dry, such contraction cannot possibly take place while the frog bears on the ground, because it is then opposed by a very considerable part of the animal's weight.

It has been supposed by some, that the principal use of the frog is to serve as a cushion and point of support to the back sinew. When we consider, however, the structure and relative situation of these parts, this opinion does not appear to be very probable. From what has been said of the frog, the reader may judge of it's importance, and how necessary it is to attend to it's preservation; but such is the mutilating practice of farriers, so determined do they seem, on all occasions, to act in opposition to Nature, that this essential part is generally the *first* that is destroyed, or rendered useless.

The *bars* form two ridges, one on each side the frog, extending from the heel of the crust toward the toe of the frog: they appear to be a continuation of the crust, being, like it, composed of strong longitudinal fibres. At the part where it joins the crust, a very firm bearing is afforded for the heel of the shoe. (See fig. 2, plate i.) The use of the bars is to *oppose* any disposition there may be in the hoof to contract, by acting as props to the heels: but in the common practice of shoeing, they are generally destroyed; for farriers have supposed that they bind the heels together, and prevent their expansion: they therefore name them *binders*, and cut them away in order to open the heels, as they term it. This practice,

however, is not now so frequent as it used to be. (See plate i, fig. 2, and plate vi.)

HAVING finished our description of the *hoof*, we shall proceed to describe the *internal* or *sensible foot*, which is represented in plate v *, as it appears when recently taken from the hoof, the arteries having been injected with wax, red coloured.

All the parts of which the internal foot is composed are, as we have before observed, endued with great sensibility; and so nicely is it adapted to the cavity of the hoof, that it completely fills it, without suffering the least inconvenience from pressure: but when the foot has been improperly treated; when the frog has been deprived of it's hard surface, for the purpose of given it what farriers conceive a neat and fashionable appearance (as if Nature had been so clumsy in this part of her work, as to require a polish from the hands of these ingenious gentlemen); when the frog has been thus mutilated, the bars destroyed, and shoes applied, that are either turned up or made very thick at the heels; and when this shoe, for the

* Frontispiece.

purpose of saving trouble, has been applied to the foot nearly *red hot*—in such circumstances the hoof must necessarily contract, whereby it's cavity will be diminished, so that the nerves and blood vessels will be compressed, the circulation of the blood impeded, and inflammation and lameness will most probably be the consequence.

All the anterior and lateral surfaces of the sensible foot are covered with that membranous, or laminated substance, which we have before described; but it differs from those laminæ, which are found on the internal surface of the crust, in possessing numerous blood vessels, which can be easily demonstrated by injecting coloured wax into the trunk of the arteries; but the laminæ of the *crust* cannot be made to appear vascular, even by the finest injection, and are therefore supposed to be insensible. At the upper part of the sensible foot, where the laminæ terminate, a roundish projecting body may be observed, extending all round the coronet to the back part of the frog: this is termed the *coronary ring*. It's surface is covered with the extremities of vessels, which are very conspicuous when the arteries have been injected with coloured wax, or size: it is from this part that the hoof is formed.

The bottom of the internal foot is formed by the sensible frog and sole; the former perfectly

resembles in shape the horny frog, to the concavities of which it's convexities are nicely adapted. In describing the horny frog, we had occasion to mention it's connexion with two elastic bodies or cartilages that are in great measure covered by the heels and quarters of the hoof; but this connexion is through the medium of the *sensible frog*, which is more immediately united to those cartilages. When the former comes in contact with the ground, and receives the pressure of the horse's weight, the latter is forced upward and rendered wider, and at the same time the cartilages are forced upward and outward, tending thereby to expand the heels and quarters, and assisting in taking off concussion. From the sensible frog and sole, the horn which composes the external frog and sole is secreted. For this purpose they are supplied with numerous blood vessels, the extremities of which may be seen upon their surface, and become very conspicuous when the arteries have been injected with coloured size. Hence we are enabled to account for thrushes, and that rottenness of the frog which generally accompanies this disease; for when the sensible frog is compressed and inflamed by a contraction of the heels, it becomes incapable of performing it's principal function, that is, the secretion of horn; and the blood, which should have been ap-

plied to this purpose, is chiefly expended in forming that offensive matter discharged in thrushes. From this we may learn also the cause of that unnatural thinness in the soles of horses that have pumice or flat feet. When the crust gives way to the pressure of the horse's weight, allowing the internal foot to bear so upon the sole as to render it either flat or convex, the extraordinary pressure which the sensible sole receives inflames it, and impedes, in a greater or less degree, the secretion of horn.

The sensible sole lies immediately under the horny sole, by which it is defended from blows or pressure. When the horny sole loses it's concave form, and becomes thin, and incapable of performing it's function, if flat shoes were applied, or if the sole were suffered to bear upon the ground, lameness would be the consequence; and it is for the purpose of preserving the sole from pressure, that the concave or hollow shoe is employed in those cases. When these parts, which we have described, are removed from the sensible foot, the tendons, ligaments, and bones, come into view.

In plate ix is a back view of the bones, ligaments, and tendons. In this the course and insertion of the back sinew, or flexor tendon, may be seen, as well as the lateral cartilages. The flexor tendon is enclosed in a sheath, which is laid open

in one part in order to show the tendon: it has been removed also from the bottom of the tendon, that it's insertion may be clearly seen.

In plate x are represented the ligaments, for which purpose the tendons were removed. The lateral cartilages may be seen in this view also.

In plate xi and xii are a front and back view of the bones. It will be unnecessary to give a particular description of these, as their form and relative situations may be seen by referring to the plate. It may be useful, however, to point out the sesamoid bones, and the navicula, or nut bone: the former are connected posteriorly with the lower extremity of the cannon, or shank bone: they consist of two small bones, firmly united by means of very strong ligaments; they compose part of the fetlock joint, having a moveable articulation with the cannon bone. Their external part affords a smooth polished surface for the back sinews to slide upon, and the same ligament which composes this surface comes round the back sinews, so as to form a sheath for them, and keep them in their situation. In this sheath a fluid similar to synovia, or joint oil, is formed, for the purpose of rendering it smooth and slippery, and enabling the tendon to move easily upon it. As these bones project a little, they serve as a pulley for the tendons to slide upon,

and afford a considerable mechanical advantage to the flexor muscles of the limb. The nut bone serves as another pulley for the tendon or back sinew to move upon: it is connected posteriorly with the coffin bone and the small pastern, and affords the same kind of polished surface and sheath for the tendon as we have before described.

CHAPTER VI.

On the Practice of Shoeing.

HAVING given, in the preceding chapter, a concise description of the horse's foot, and pointed out the uses of the various parts which compose it, I shall now describe the method of shoeing. It will be necessary to premise, that the mode of shoeing most commonly practised has a destructive tendency, and produces such a variety of diseases, that we seldom meet with a foot that has not lost, in a greater or less degree, it's original shape: it must be obvious, therefore, that one kind of shoe cannot with propriety be recommended for general application, and that it is necessary, on all occasions, to adapt it carefully to the state of the foot. This constitutes the most difficult part of the art of shoeing; and, from neglecting this precaution, shoes of the best form have often occasioned lameness.

In fig. 1, plate i, is represented a colt's hoof in a state of nature, of which no part has ever been cut away, or ever been shod: this we have given as a standard of perfection, from which the goodness of feet in general may be judged of; for


A
B
C
D

surely no one will hesitate for a moment in admitting that the natural form is the best it can possibly possess.

In fig. ii of the same plate is shown a perfect foot, properly prepared for the shoe. In this foot the superfluous horn has been cut away, and an even surface made for the shoe to bear upon.

If we examine the feet of a hundred colts, it will be found that more than ninety of them are of the same form. It is true that some may have grown more luxuriantly than others, whereby the crust will be deeper, and the bottom part may have been partially broken, so as to give the foot a ragged and uneven appearance; still the essential shape is the same; and when this superfluous horn has been removed, it will be found that the bottom of the foot will be nearly circular, the sole concave, the bars distinct, and the frog and heels open and expanded.

In preparing the horse's foot for a shoe, the lower part is to be reduced, when luxuriant, which is generally the case, more particularly at the toe, and this is to be done by means of a butteris or rasp: the loose scaly parts of the sole are likewise to be removed, so as to preserve it's concavity; and a small cavity is to be made with a drawing knife, between the bar and crust, to prevent the shoe from pressing on that part,

casioning corns: it is, however, necessary, in doing this, to take particular care that the connexion between the bar and crust is not destroyed or weakened, which would of course render the bar useless.

The junction of the bar and crust affords a firm bearing for the heel of the shoe, and is to be rasped perfectly flat, and so low as to be exactly on a level with the frog, that they may bear equally on a plane surface before the shoe is applied; indeed, the whole of the bottom of the crust is to be made perfectly flat and even at the same time with the rasp, that the shoe may bear equally on every part of it. Farriers should never be allowed to do this by means of a hot shoe, which is too frequently the case. If any ragged parts are observed in the frog, they are to be carefully removed with a knife; for, if suffered to remain, they might afford a lodgement for dirt and gravel. Thus do we prepare a foot for the shoe; and to a foot of this description, I mean one that is sound and perfect, or that has not suffered any material alteration in it's form from improper shoeing, the shoe (fig. 3, plate iv) is to be applied.

The toe of the shoe, for a middle-sized horse, is about an inch in width, and half an inch in depth or thickness; the heels about half an inch

in width, and three eighths in depth. The wearing part of the toe is to be made of steel; and it may be observed, that the nails are brought very near to the toe, but not quite round it; for when that is done, there must also be a groove made, which considerably weakens that part, and almost all horses wear principally at the toe. Both surfaces of the shoe are perfectly flat; and the heel of the shoe rests upon the junction of the bar and crust, beyond which it should never extend.

It will be supposed, perhaps, that a shoe which is flat on that surface next the foot will be apt to produce lameness by pressing on the sole: but let it be recollected, that this shoe is recommended only for a sound foot, in which the sole is always a little concave; so that it cannot possibly receive any pressure from a flat shoe. It may be said, also, that when the nails are placed so far from the heels, the shoe will not be sufficiently secure, and will be frequently loosened; but as the shoe bears equally on every part of the crust, this objection cannot have any weight. It must be granted, however, when a foot is pared in the common way, that is, when the heels have been *opened*, and the shoe so applied, that nearly an inch of the heel has no bearing upon the crust; that, if the nails were placed so far from the heels as I have recommended, the shoe would be very

insecure; for, as much of it as had no bearing upon the crust would operate occasionally as a lever in raising the nails; and consequently the shoe would frequently be loosened. Farriers, therefore, find it necessary, when the foot has been thus pared, and the shoe applied in this way, to place the nails in the quarters, by which the shoe is certainly rendered more secure than it would be had they been placed nearer the toe.

Many disadvantages, however, attend this method. In the first place, by placing the nails in the quarters, they prove a considerable obstacle to the expansion of the heels; and as the crust is generally much thinner at the quarters than at the toe, the sensible parts are more liable to be wounded: but this does not apply to the hind feet, in which the crust of the quarters is generally thicker than that of the toe. When a horse overreaches, if any part of the shoe has no bearing upon the crust, it is very liable to be struck by the toe of the hind foot; and shoes are often forced off in this way. To this may be added the insecurity of such a shoe when a horse is rode on a deep or heavy ground.

It will probably be observed of the shoe which I have recommended, that it is inconsistent with the principle which has been laid down respecting the necessity of the frog's receiving pressure.

I believe it is an incontrovertible fact, that, unless the frog receives a certain degree of pressure, it will become soft, and incapable of affording sufficient protection to the sensible frog, which it covers; and that the heels will gradually contract, and the natural form of the foot will be destroyed; for I have proved, by experiment, that the bars alone are not sufficient to *prevent* contraction, though they certainly oppose it with considerable force; but it does not follow from this that it is necessary for the pressure to be *constant*, nor do I believe that a shoe which allows the frog to bear upon the ground, when the horse stands upon a plane hard surface, can be always applied, even to *sound* feet, without inconvenience. There can be no doubt that a horse in a state of nature has his frog almost always in contact with the ground, and then of course he feels no inconvenience from it; but when burdens are placed upon his back, and he is driven about upon hard roads, he is certainly in very different circumstances; and if the frog in such cases were constantly exposed to this severe pressure, it would sometimes, I believe, occasion lameness.

In the foot, prepared for the shoe (fig. 2, plate i), the frog and heels are on a level, and if placed on a plane hard surface, would bear equally; by applying the shoe (fig. 3, plate iv),

the frog would be raised three eighths of an inch from the ground; so that when the horse is going upon a hard surface, where he would be most liable to feel inconvenience from the pressure on the frog, it receives none; but upon soft yielding ground the frog certainly receives pressure, and without giving the animal any pain. To a horse that travels or works regularly, and is occasionally taken upon soft ground, I believe the pressure the frog receives in this way is quite sufficient to preserve the foot in a state of health; but when a horse is kept almost constantly in the stable, standing upon hot litter, particularly in hot and dry weather, his feet will certainly be undergoing an alteration in their form, and will be in a progressive state towards disease.

In these cases, however, contraction of the hoof may be effectually prevented by means of the patent artificial frog, invented by Mr. Coleman*. By this ingenious contrivance a horse's frog may receive sufficient pressure, in whatever circumstances he may be placed, to prevent contraction, and keep the foot sound and healthy, without the inconvenience of wearing thin heeled shoes; but it must be remembered, that, whenever the frog is much exposed to pressure, whe-

* Professor of the Veterinary College.

ther it be by applying the patent frog, or by the thin heeled shoe, and reducing the crust at the heels, it is necessary the quarters and heels should possess a proper degree of pliancy. If they be rigid and inflexible, it is evident that the sensible frog and cartilages would be placed between two fixed points, and they would consequently be bruised and inflamed. I have indeed seen several cases of lameness produced in this way. Whenever the hoof, therefore, appears to be too dry and strong, or to have lost it's natural elasticity, it is necessary to rasp the quarters, and keep the whole hoof moist, either by applying several folds of flannel round the coronet, constantly wetted, or by making the horse stand in soft clay four or five hours during the day: by these means the natural flexibility of the horn would be restored, and the heels and quarters yield, in a small degree, whenever the horse's weight was thrown upon the frog.

Having said as much as appears to be requisite of the method of shoeing a sound foot, I shall proceed to describe those diseases of the foot which render a different kind of shoe necessary. In the first place it will be proper to observe, that when a horse, even with a sound foot, has worn shoes that are very thick, or turned up at the heels, particularly if, at the same time, the

crust at the heels have been suffered to grow so high that the frog is kept at a considerable distance from the ground, it would be very improper to reduce the heels suddenly, so as to allow the frog to receive pressure, since the back sinews would in this case be injured, and lameness might ensue. In feet of this description, it is necessary to remove from the toe all that can be done without exposing the part too much, and to lower the heels gradually: the toe of the shoe should be rather thin, and of the best steel.

The shoe for draught horses should be made flat on both surfaces, provided the sole is of a proper form and thickness; but if flat or convex, and consequently too thin, which is often the case in horses of this description, the internal surface of the shoe must be concave: still the external surface should be flat; for the convex shoe, which is commonly used for draught horses, prevents them from treading securely, and renders them incapable of exerting the whole of their strength.

CHAPTER VII.

Diseases of the Foot.

THE most frequent cause of lameness in the foot is a contraction of the horny matter that composes the hoof, generally accompanied by an increased concavity and thickness of the sole. The cavity of the hoof being thus diminished, the sensible foot suffers a greater or less degree of compression, which occasions in it inflammation and lameness. When we examine the bottom of a contracted foot, instead of being circular, it will be found of an oblong form; the heels and frog will appear as if they had been squeezed together. Sometimes the frog has become rotten, and discharges an offensive matter.

The sensible foot may also be compressed and inflamed by an increased thickness, and a consequent loss of elasticity in the hoof and sole, and in this case there is seldom any considerable alteration observed in the external form of the foot.

We sometimes meet with horses that go perfectly sound, though their hoofs are much contracted: on the other hand, we often see severe lameness produced by a slight degree of contrac-

tion. In attempting to cure this disease, the first step to be taken is to remove carefully with a knife all the rotten parts of the frog, and apply tar to those which are sound. A small quantity should also be poured into the cleft of the frog: this will promote the secretion of horny matter, and, if assisted by pressure, will increase the solidity of that which is already formed. The quarters and heels are then to be rasped, particularly at the coronet, and the superfluous parts of the sole removed with a butteris and drawing knife. The toe is to be shortened as much as can be conveniently done: and if the heels be too high, that is, if the crust at the heels be too deep, it will be necessary to reduce it with the butteris and rasp. It frequently happens, however, in feet of this description, that the heels are too low: in such cases they must be carefully preserved; and, when a shoe is applied, it should be made thicker at the heel than at the toe, and somewhat longer than that recommended for a sound foot.

When a contracted hoof has been thus treated, the next thing to be done is to keep the foot as moist as possible, and expose the frog constantly to pressure, either by means of the artificial frog, or by reducing the crust at the heels. When these remedies have been persevered in for a short time, the frog will have acquired a certain degree

of hardness and solidity; it will then be proper to turn the horse out into some soft meadow ground, without shoes, taking care that the bottom of the foot is occasionally reduced, so that the frog may constantly receive pressure. If the foot be examined after a short time, it will be found that all the new formed hoof at the quarters and heels—that is, all the horn that has been produced at those parts since the remedies were first employed—instead of growing down nearly in a perpendicular direction, or obliquely inward, is forced outward in it's descent, so that the cavity of the hoof will be considerably enlarged, and the compression of the internal parts removed. When the horse has been at grass a sufficient time for the new hoof to grow completely down, the shape of the foot will be found much altered; the heels, instead of being narrow, will be open and expanded, the frog will be considerably widened, and not squeezed together as before, and the oblong form will be changed to one that is more circular; in short, when the frog during this time has been properly exposed to pressure, and the quarters so rasped as to be rendered sufficiently flexible, the hoof will be found very similar in it's form to that of a colt.

In cases where a contraction of the hoof has already produced inflammation and lameness, parti-

cularly if the lameness be not recent, it will be advisable to blister the pasterns previous to turning the horse out; and when the inflammation is very considerable, a laxative ball, with a cooling diet, will be serviceable. The cruel operation of drawing or tearing off the sole has been recommended as a remedy for contracted feet, but very little reflection will convince any one of it's inefficacy. Whenever it has been supposed to do good, the benefit has probably arisen from the long run at grass that becomes necessary after it, and then the advantage might have been equal, perhaps greater, had the operation been omitted. It has been observed before, that, in contracted hoofs, there is generally an increased concavity in the sole, whence we may reasonably conclude that it opposes the contracting causes, though in the end it is not capable of preventing the contraction from taking place. Upon a horse that has been lame from this disease a considerable time, it is difficult, if not impossible, to perform a radical cure: in such cases, I have several times succeeded in removing the lameness, but the internal parts had become so irritable, or their organization had been so altered, that very moderate work would cause the lameness to return. When the lameness is not so considerable as to render the horse totally unfit for work, it

will be advisable to apply a shoe that is thicker, wider, and longer at the heels, than that recommended for a sound foot; and if the frog be tender and rotten, the bar shoe will be found serviceable (plate iv, fig. 2). It will be useful, also, to keep the hoof as moist as possible, by making the horse stand in wet clay four or five hours during the day.

In examining, after death, the feet of horses that have been thus diseased, we find generally that the laminæ have been destroyed, the form of the coffin bone altered, and it's size diminished, or the lateral cartilages ossified. In some cases, however, no appearance of disease can be perceived on the internal parts of the foot. When the disease is gone so far as to injure the laminæ, cartilages, or coffin bone, there is not a possibility of removing it, which shows how necessary it is to attend to the feet of horses more than is commonly done: and that, whenever any alteration is perceived to be going on in the shape of the foot; when the heels appear to be getting narrower, the frog squeezed together, and discharging matter, in consequence of the compression which the sensible frog suffers; it surely must be of importance to adopt such measures, as will not only prevent the disease from going any farther, but will also restore the foot to it's natural healthy state: for

when it has gone so far as to produce absolute lameness, the cure is by no means certain. How frequently do we meet with horses that are said to be tender in the feet! and how subject are they to fall in consequence of this tenderness, which generally arises from contraction of the crust! In this case, the sensible frog is extremely irritable and inflamed; and the horny frog, which Nature designed for it's protection, being soft or rotten, and inadequate to it's function, every blow that it receives must of course give the animal very considerable pain; and I have known many valuable horses thrown down in this way; since, however high and wide the heel of the shoe may be, the frog will be subject to occasional blows from sharp projecting stones. Whenever, therefore, any of those symptoms make their appearance, and whenever the foot seems to be undergoing an alteration in form, immediate recourse should be had to the mode of prevention we have pointed out.

The next disease to be noticed is the flat and convex sole, or, as it is more commonly termed, the punice foot, which is represented in plate iii, fig. 2. This disease most commonly occurs in heavy, draught horses, and seems to arise from a weakness of the crust: for, when the sole becomes flat or convex, the crust also loses it's proper form, and becomes flatter, appearing as if it had

been incapable of supporting the animal's weight, and had therefore given way, allowing the internal foot to press so upon the sole, as to give it the appearance we observe. This explanation of the disease will perhaps appear better founded, if we consider, that, when a horse is drawing a heavy load, not only his own weight, but great part of that which he is drawing also, is thrown ultimately upon his feet; and, as the fore feet support by far the greatest share, it is not at all astonishing, that the crust should sometimes give way; for though it possesses sufficient strength for the purposes of the animal in a state of nature, yet that strength is limited, and not always adequate to the heavy burdens which the crust has to sustain. When the sole becomes flat or convex, it is rendered also thinner than it is naturally, and sometimes so much so, as to yield easily to the pressure of the finger. The sole in this state is of course incapable of affording sufficient protection to the sensible sole, which is then closely in contact with it; and, if it be exposed to pressure, lameness must be the consequence. It is almost superfluous to observe, that the flat shoe would be ill adapted to a foot of this description: it becomes necessary, in this case, to apply one that is concave on it's internal surface, that the sole may not receive any pressure from it, and of sufficient width to protect

the sole as much as can be done from the pressure of the ground. In plate iv, fig. 1, this shoe is represented, in which it may be observed, that, although the internal surface is concave, still there is a flat surface for the crust to bear upon. In attempting to cure this disease, it is first necessary to take off the horse's shoes, and to make him stand on a flat, hard surface: this kind of pressure will harden the soles, and in the end render them thicker, particularly if tar be frequently applied to them. I cannot say that I have ever seen the disease radically cured by this treatment, but I have known considerable advantage derived from it, especially in one case, where the soles, from being convex and very thin, became flat, and sufficiently firm to bear moderate pressure without inconvenience to the horse.

We sometimes meet with horses, particularly among those that are well bred for the turf, whose pasterns are remarkably long and oblique in their position, while the heels are very low, and the toe of considerable length. If thin heeled shoes were applied to feet of this description, or if the toes were not kept short, the horse would be very liable to lameness, from the extraordinary pressure to which the ligaments and back sinews would be exposed: the heels therefore of such horses are to be carefully preserved, and the toes

kept as short as possible. The shoes which are applied should be made sufficiently thick and long at the heel to make up for the deficiency of horn in that part, in order to relieve the ligaments and back sinews; and with the same view the toe should be made rather thin, and of the best steel.

There is another kind of deformity sometimes observable in the foot, that is, the hoof loses that oblique form represented in plate iii, fig. 1, and approaches towards the perpendicular (fig. 3): at the same time the heels become very high. In this case it is necessary to reduce the crust at the heels, and apply the thin heeled shoe.

Sand Cracks

Are longitudinal fissures in the hoof, generally near the heels, beginning at the coronet. Horses, whose hoofs have become dry and brittle, are most subject to them. They generally occur in the hot and dry months of summer, and seem to be occasioned by a strong disposition in the hoof to contract, at a time when it is dry and inflexible. They do not always cause lameness, and are sometimes very easily cured: but when the fissure is so deep as to reach the sensible parts, it often pro-

duces very severe lameness, and requires a considerable time to be completely removed. Having rasped the quarter, let the crack be opened with a drawing knife, so that the actual cautery, or red-hot iron, may be applied to it. This will cause a matter somewhat resembling glue to exude, which will tend to fill up the fissure, and protect the sensible parts that would otherwise be exposed. Our next object is to remove the contractile disposition of the hoof, without doing which every other remedy would avail little. This is to be effected by keeping the hoof constantly moist, either by means of clay, or by turning the horse out to grass in soft moist ground; but previous to this it is necessary to rasp the bottom of that quarter which is cracked, so that no part of it may bear upon the shoe.

Corns.

CORNS are generally the consequence of bad shoeing, or improper management of the foot, and may therefore be avoided by following the directions I have given under that head: but when they do occur, it is necessary to remove the red part, or corn, with a drawing knife, and to apply

the shoe so that the tender part may not receive any pressure. When it has been neglected, we sometimes find matter formed in this part, which often breaks out at the coronet: in this case, it is necessary to make an opening for the matter in the angle between the bar and crust. (See fig. ii, plate 1, letter *c*.)

The sore is to be dressed with compound tincture of benzoin, and the cavity to be loosely filled with digestive ointment, which is to be kept in by means of a bar shoe.

Quittor.

This disease generally arises from a wound or bruise in the coronet, and, if neglected, penetrates under the hoof, forming sinuses in various directions. The most effectual method of treating this complaint is to ascertain, in the first place, the direction and extent of the sinuses, and then to force into them with a strong probe some crystallized verdigris, rolled up in thin blotting or silver paper. This, though apparently a severe remedy, will be found very effectual. Sublimate and arsenic have been strongly recommended as remedies for the quittor; indeed it is probable that

any caustic application would effect a cure; but I have succeeded so well with the crystallized verdigris, that I have not been induced to try those medicines. When a corn has been neglected and suffered to break out at the coronet, or when the foot has been wounded, or *pricked*, as it is termed by the farrier, in shoeing, and this is not discovered until matter appears at the coronet; though these may be considered as cases of quittor, a different treatment is required from that we have just described. In these cases the cure greatly depends on making an opening for the matter in the bottom of the foot, where the nail which inflicted the injury entered; or if produced by a corn, the opening must be made in the angle between the bar and crust, at *e*, fig. 2, plate i. The best dressing on these occasions is the compound tincture of benzoin and digestive ointment: a poultice is sometimes required to soften the horny matter, and subdue any inflammation that may exist in the foot.

Thrush.

This disease consists in a discharge of fetid matter from the cleft of the frog, which part is

generally rotten, and so soft as to be incapaple of affording sufficient protection to the sensible frog, which it covers: hence arises that tenderness of the foot which is so often observed. When this complaint attacks the fore feet, it is seldom, if ever, an *original* disease, but merely a *symptom* or an *effect*. The cause is generally a contraction of the horny matter at the quarters and heels, by which the sensible frog is compressed and inflamed: the discharge which takes place is a consequence of this inflammation, and may be considered as an ineffectual effort of Nature to cure it. The discharge, however, certainly diminishes the inflammation, and prevents it from becoming so considerable as it otherwise would; for it often happens, when it has been stopped by the injudicious application of astringents, or when it ceases spontaneously, that the inflammation becomes violent, extends to the other parts of the foot, and occasions severe lameness, which generally is relieved or removed by a return of the discharge. But we are not to infer from this that an attempt to cure thrushes is improper; it only shows, that it is necessary, in the first place, to remove the *cause* of the disease. With this view the quarters are to be rasped, and the hoofs kept constantly moist by making the horse stand in clay some part of the day, taking care to keep the frog

dry by means of tar. When by these means we have succeeded in removing, in some measure, the compression, and consequent inflammation of the sensible frog, it will be advisable to apply some astringent to the frog, which, if assisted by pressure and tar, will render that part firm and solid, and the discharge will of course cease when the inflammation leaves the sensible frog.

The best astringents for this purpose are a solution of white or blue vitriol, alum, &c. There are some cases, however, of thrushes, which, though occasioned by compression of the sensible frog, it is difficult, if not impossible, to eradicate. I have examined feet with this disease after death, and have found the concave part or cleft of the *sensible* frog in a state of ulceration, which of course rendered it incapable of secreting horny matter, and proved a constant source of thrushes.

With respect to those thrushes which attack the hind feet, and which sometimes, though rarely, happen also in the fore feet, independently of the above cause, a different treatment is required. When the discharge has existed for a considerable time, by stopping it hastily we frequently produce inflammation and swelling of the legs: still it is necessary to check the disease, since, if neglected, it sometimes degenerates into that dangerous disease termed *canker*. It is advisable, therefore, in

such cases, to keep the bowels open, by the following laxative ball, given every morning until the desired effect is produced, and repeated occasionally. The best application for the frog is tar, and one of the above astringents: other remedies, however, have been strongly recommended, among which are powdered lime, Egyptiacum, tincture of myrrh, and other astringents. This treatment will be greatly assisted by two or three hours' exercise every day, and frequent hand-rubbing to the legs.

LAXATIVE BALL.

Aloes	2 dr.
Castile soap	3 dr.

To be made into a ball for one dose.

Canker.

This disease frequently originates in a thrush, and most commonly attacks the hind feet: it generally proves difficult to cure, and not unfrequently incurable. The frog is the part first attacked, which becomes soft and rotten, discharging matter of a peculiar offensive smell. The horny frog is at length totally destroyed, and

the sensible frog, instead of secreting horn, forms a substance somewhat resembling shreds of leather. The disease soon extends to the sole, and other parts of the foot, even to the coffin bone, and is then, I believe, incurable. The first thing to be done is to cut away freely all the diseased parts; and, when the bleeding is stopped, let the following liniment be applied, and repeated every morning; the dressings may be kept on by means of a bar shoe. Pressure on the diseased part will very materially assist in effecting a cure. Whenever the foot is dressed, such diseased parts as may again make their appearance are to be carefully removed; and, to such as do not appear to be sufficiently affected by the liniment, let a little sulphuric or nitrous acid be applied. When the parts which were diseased begin to look red and healthy, and the discharge loses that peculiar smell before noticed, becoming whiter, and of a thicker consistence, there is a great probability of a perfect cure being effected; and when these favourable appearances take place, some mild application will be proper, except to such parts as do not appear to have entirely lost their foul appearance.

STRONG LINIMENT.

N° 1.

Oil of turpentine . . . . . 1 oz.
Sulphuric acid . . . . . ½ oz.

Mix very cautiously.

Tar . . . . . 4 oz.

Mix.

N° 2.

Red nitrated quicksilver . . . 1 oz.
Nitrous acid. . . . . 2 oz.

The former being dissolved in the latter, mix them cautiously with four ounces of tar.

MILD LINIMENT.

Crystallized verdigris, finely powdered. . 1 oz.
Honey . . . . . 2 oz.
Powdered bole and alum, of each . . . ½ oz.

Vinegar enough to give it the consistence of a liniment, to be mixed over a gentle fire.

Cutting.

A HORSE is said to *cut*, when he wounds the inside of the fetlock joint with his foot in travelling. This may arise from various causes, the

most common of which seems to be an improper position of the foot; the toe, instead of being in a line with the point of the shoulder, inclining either inward or outward. In the latter case, we generally find that the inner quarter of the hoof is lower than the other, and that the faulty position of the foot depends upon this inequality of the quarters: it must be obvious, therefore, that the remedy, in this case, consists in lowering the outer quarter, and making the inner branch of the shoe thicker than the other. When the toe inclines inward, it renders a horse liable to cut on the inside of the knee, at the lower part of the joint: this is termed the speedy cut, from it's happening upon the trot or gallop, and is considered as a dangerous failing in a horse, the violence of the pain which the blow occasions sometimes causing him to fall very suddenly. The remedy for this is to keep the toe as short as possible, that being the part which generally inflicts the wound, and to alter the improper position of the foot. Cutting frequently depends upon weakness or fatigue, and is therefore very liable to happen to young horses, when rode hard over deep heavy ground. The only remedy, in this case, is to avoid the cause, until the legs acquire more strength, or to protect the wounded part with leather, or a boot, as it is termed. Whenever a horse cuts, it is advisable to

ascertain what part it is that inflicts the wound, and this may often be done, by applying tar to the wounded part: this will of course adhere to the part of the hoof, or shoe, which comes into contact with the wound. Should it be the edge of the shoe, which, I believe, is seldom the case, the cause may be easily removed by the farrier. Whatever part of the hoof it may be, it should be rasped away, as much as can be done with safety, and particular attention paid to the position of the other foot, which, if improper, should be improved, as much as it can be, by shoeing.

CHAPTER VIII.

MISCELLANEOUS.

1. *Of Bleeding.*

THIS operation is frequently necessary in the diseases of horses, and is performed either with a lancet or fleam, in the neck vein.

The blood should always be preserved, that the *quantity* drawn may be accurately known, and that it's *quality* may be ascertained. If, after it has coagulated, a white, or rather a light buff-coloured jelly be found on the surface, an inflammatory state of body is indicated; but, in order to render this criterion useful, the blood must not be taken from too small an orifice, nor should it be suffered to run down the sides of the vessel which receives it.

Blood, drawn from a healthy horse, very soon coagulates, and appears like a uniformly red jelly, with a small quantity of fluid, resembling water, floating on it's surface. This red jelly may, by washing, be rendered of a light buff-colour, and exactly resembles the buff, or size, as it is termed, of inflamed blood. The most healthy blood,

therefore, contains this size; and the cause of it's not being conspicuous in such blood is, that coagulation takes place before the red colouring matter can have time to separate from it; but as blood, that is drawn from an animal labouring under general *inflammation*, or fever, always preserves it's fluidity much longer than healthy blood, and as the red colouring particles are specifically heavier than the fluid with which they are mixed, they will, of course, be gradually subsiding, as long as the mass continues fluid, leaving a coat of buff-coloured jelly on the surface.

It has been observed before, that healthy blood, when suffered to coagulate, appears to consist of two parts, the red jelly, termed *crassamentum*, and the water, or *serum;* and that the former may afterwards be separated, by washing, into two parts *viz.* the red coloured particles, or *red globules*, as they are termed by anatomists, and buff-coloured jelly, or *coagulable lymph*. The proportion, with these component parts of the blood bear to each other, seems to depend upon the state of the system at the time it is drawn. When the body is healthy and vigorous, we find but little serum; when it is preternaturally excited, or in a state of inflammation, there is still less; and when the animal is weak and debilitated, there is generally an abundance of serum. Another circum-

stance to be attended to, in examining blood, is the firmness or tenacity of the coagulum. In health, the blood, when drawn, and suffered to coagulate, is of a moderately firm consistence, and easily broken; but when the system is highly excited, as in general inflammation, so great is the tenacity of the mass, that the finger can scarcely penetrate it. On the other hand, when the powers of life are weak, as in the latter stage of symptomatic fever, the blood almost loses it's power of coagulating. I recollect a glandered horse, that was made the subject of experiments, and that died in consequence of large and repeated doses of mercury; the debility this produced was excessive; and the blood appeared as thin, and nearly of the same colour, as claret. The necessity, therefore, of examining blood, that is drawn from a diseased horse, must be obvious, as it assists in forming a judgment of the nature of the disease, and points out the proper remedies. When blood exhibits buff on it's surface, particularly if, at the same time, the coagulum be firm and solid, we may be certain that the complaint is inflammatory, and that bleeding may be repeated with advantage. If, on the other hand, the mass of blood be wanting in tenacity, and have more serum than usual, we may safely conclude that the system is in a state of de-

bility, and consequently, that bleeding is highly improper. .

In cases of symptomatic fever, it will generally be necessary to take away four or five quarts of blood at the first bleeding; I have seen even six quarts taken, with manifest advantage. It is at this period of the disease (it's commencement) that copious bleeding is particularly useful; and it is from an absurd prejudice, which obtains against this practice, that so many horses are destroyed by such fevers. It is truly laughable to hear a groom or farrier pronouncing, with an affectation of unerring sagacity, upon the qualities of blood, frequently observing, that it is too hot, and that consequently the horse must have a fever; that it is too dark coloured, and therefore foul; or that it is too thick, and consequently unfit for circulation; and sometimes it is said to be full of humours. With respect to the *heat* of the blood, it will be sufficient to observe, that it preserves nearly the same temperature, while circulating in the body, whether the animal be an inhabitant of the most sultry or of the coldest country, whether in health or in the highest fever.

As to the colour of the blood while flowing from the body, it may be either red or of a dark colour, as the operator pleases; since, by pressing on the vein, for a short time before the orifice is made, it may always be made to appear of a dark

colour. If an artery be opened, the blood which flows from it will be of a bright scarlet colour. The opinion that blood sometimes becomes thick, or viscid, in the body, was supported by many respectable philosophers, but is now universally abandoned, because it has been *proved* to be erroneous.

I think it a bad practice to bleed horses frequently, when there is no urgent occasion, as they thereby acquire a plethoric habit; and unless the operation be regularly performed, and gradually increased in frequency, troublesome diseases might ensue. Horses of a full habit, that are consequently liable to inflammatory complaints, will receive most benefit from moderate and long continued exercise, and good grooming. When bleeding is performed for the cure of important inflammatory diseases, a large orifice should be made in the vein, and the blood drawn in a large stream, as we thereby diminish the action of the heart and arteries, much more readily than if it were drawn slowly from a small orifice. In cases of external and circumscribed inflammation, topical bleeding is eminently useful, which is done by opening some veins contiguous to the affected part, or by scarifying the inflamed surface.

Thus, in diseases which depend upon an undue proportion of blood in the vessels of the brain, relief will often be obtained by opening the artery

of the temple : and, when the eye is much inflamed, it will be found useful to scarify the inner surface of the eyelid.

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2. *Of Physic.*

In purging horses, great care and attention are necessary, their bowels being particularly irritable, and liable to inflammation. The physic commonly given is certainly too strong, and I am convinced, that many horses have been destroyed by the immoderate doses that have been recommended by writers on farriery. When this happens, the mischief is generally attributed to the coarseness or impurity of the medicine, and the druggist is undeservedly censured. A modern author has ingeniously availed himself of this prejudice, to explain the violent effects which his cathartic prescriptions have sometimes produced. I must presume, however, to suggest, that these effects were more probably occasioned by the *excessive quantity*, than by the impurity of the purgative ingredients.

The only certain and safe purgative for horses is aloes; and of the different kinds of aloes, the *Barbadoes* is undoubtedly the best. The *suc-*

cotrine, which is generally considered the mildest, as well as the most certain in it's effect, is too weak, and so very uncertain and variable in it's operation, that we cannot use it without frequent disappointment. Practitioners seem now to be convinced of the superiority of the Barbadoes aloe, as it has been sold of late nearly at double the price of the succotrine.

If the reader wish to have farther information on this subject, he is requested to consult the author's second volume, or Veterinary Materia Medica, &c.

It is advisable to prepare a horse for physic by given him bran mashes for a day or two. This will gently relax the bowels, and remove any indurated fæces that may be lodged in them: it will also tend to facilitate the operation of the medicine.

About a peck of bran, divided into four feeds, will be sufficient for twenty-four hours; and, as it is desirable to give the horse but a small quantity of hay, I think it advisable to add to each bran mash about a pint or more of bruised or broken oats, which will tend to preserve his strength and condition. He should be allowed to drink a moderate quantity of water frequently.

When a horse is purged for the first time, it is prudent to give a very moderate dose. Were the

common quantity given to one of weak, irritable bowels, there would be danger not only of producing great debility, and thereby of counteracting the intention of the medicine, but likewise of destroying the animal, by bringing on an inflammation of the bowels: and this is by no means an unusual occurrence. Should the first ball not operate sufficiently, a stronger may be given, after an interval of a few days *.

* Mr. John Lawrence recommends from one ounce and a half to fourteen drams of succotrine aloes, as a moderate dose for a race horse, a dose which I am sure would in many horses prove very injurious; and as a remedy for that kind of colic or gripes, which often happens from too strong a dose of physic; or from bad management during it's operation, he recommends in slight cases a cordial ball, and in more serious cases camphor dissolved in a small quantity of gin, with oil of amber, and balsam of capivi and Peru, all of them powerful stimulants, and very likely in such cases to produce inflammation in the bowels. Whenever a horse appears sick and griped after taking physic, or, as the above author properly describes him, hanging down his head, refusing his food, appearing as if swollen in the carcase, heaving in his flanks, and frequently throwing up his tail, without ability to evacuate, all medicines of a stimulating quality should be avoided, the straight gut should be emptied by the hand, and afterward clysters of water-gruel, with olive or linseed oil, should be injected. The horse should be allowed to drink frequently of warm water, or thin water-gruel; and if he refuse to drink, it is absolutely necessary to drench him several times a day. These means, assisted by walking exercise, will soon bring

The morning is the best time for giving a purgative, the horse having previously fasted two or three hours. If he be disposed to drink after taking the ball, give a moderate quantity of warm water, which will promote it's solution in the stomach, and consequently expedite the operation. During this day the horse is to be kept in the stable, and fed with bran mashes and a moderate quantity of hay: he may be allowed also to drink plentifully of warm water; and if he refuse it in this state, let it be offered nearly cold. The following morning he is to be exercised; and at this time the medicine will generally begin to operate.

on an evacuation, and the horse will be relieved. It is often supposed, that these unpleasant symptoms are caused by some bad quality in the aloes. But I am convinced, from long experience, that it is not so; and I will venture to affirm, that the above symptoms are always occasioned either by too large a dose of aloes, or by treating the horse improperly after he has taken it. Another circumstance may sometimes assist, and that is, the stomach containing too large a quantity of food at the time physic is given, and particularly if the food be deficient in moisture. But this can never happen if the directions we have given be duly observed. I have for several years employed the Barbadoes aloes very extensively, giving often from thirty to fifty doses in the course of a week; and have found, that from half an ounce to one ounce may be considered as the proper dose. For a delicate blood-horse half an ounce generally proves sufficient; to a common saddle horse, five or six drams; to a waggon-horse, one ounce.

Should the purging appear to be sufficient, he need not be taken out a second time; but when the desired effect does not readily take place, trotting exercises will tend to promote it. During this day also he is to be carefully supplied with bran mashes and warm water. Warm clothing, more particularly when out of the stable, must not be omitted. The next day the purging will generally have ceased, and then a small quantity of corn may be allowed. When physic does not operate at the usual time, the horse appearing sick and griped, relief may generally be obtained by giving a clyster of water-gruel, and making him drink freely of warm water, assisted by exercise. When the purging continues longer than usual, and the horse appears to be considerably weakened by the evacuation, let the astringent ball be given.

It will be observed, perhaps, that some ingredients, commonly thought necessary in physic, have been omitted in the following formulæ. These medicines have been proved, however, to be perfectly useless. Jalap, though given to the amount of four ounces, will produce very little purgative effect upon a horse; nor will salts, or cream of tartar. Rhubarb, however large the dose, will not operate as a purgative, though it may be useful in moderate doses as a stomachic.

N° 1.

Barbadoes aloes	5 dr.
Prepared natron	2 dr.
Aromatic powder . . .	1 dr.
Oil of caraways	10 drops.

Sirup enough to form a ball for one dose.

N° 2.

Barbadoes aloes	7 dr.
Castile soap	½ oz.
Powdered ginger. . . .	1 dr.
Oil of caraways	10 drops.

Sirup enough to form a ball for one dose.

N° 3.

Barbadoes aloes	1 oz.
Prepared natron	2 dr.
Aromatic powder . . .	1 dr.
Oil of anise-seeds . . .	10 drops.

Sirup enough to form a ball for one dose.

The ball N° 2 I have generally found sufficient for strong horses, and have scarcely ever had occasion to go farther than N° 3. Should any one, however, be desirous of a stronger medicine, it may readily be procured by adding one or two drams of aloes, or one dram of calomel

to the ball N°. 3: but I must not omit to observe, that there appears to me to be a considerable danger in making the addition.

Since the former edition of this book was published, I have found great difficulty in procuring *genuine* succotrine aloes, and have often been disappointed by it; I have been induced, therefore, to use the Barbadoes, and can now recommend it with confidence, in preference to every other kind. The Barbadoes aloe is of a dark brown colour, approaching to blackness, of a strong disagreeable smell, not very brittle, and opaque.

Diuretics.

These are medicines, which, by stimulating the kidneys, increase the secretion of urine. The following formulæ I have found both convenient and efficacious:—

N° 1.

Castile soap	4 oz.
Powdered resin and nitre of each	2 oz.
Oil of juniper	½ oz.

Linseed powder and sirup enough to give it a proper consistence, to be divided into six balls for strong, or eight for weak delicate horses.

N° 2.

Castile soap	4 oz.
Venice turpentine	2 oz.

Powdered anise-seeds enough to give it a proper consistence, to be divided into six balls.

Alteratives.

THESE are medicines which produce their effects almost insensibly; the following formulæ will be found efficacious:—

ALTERATIVE POWDERS.

N° 1.

Levigated antimony	6 oz.
Flowers of sulphur	8 oz.

Mix for eight doses.

N° 2.

Powdered resin	4 oz.
Nitre	3 oz.
Tartarised antimony	1 oz.

Mix for eight doses.

N° 3.

Unwashed calx of antimony .	2 oz.
Calomel	2 dr.
Powdered anise-seeds . . .	1 oz.

Mix for eight doses.

Should a ball be thought more convenient than a powder, the change may be easily made by the addition of sirup and linseed powder.

A dose of the alterative powder should be given every evening with the corn, until the whole quantity (that is, eight doses) is used.

But the powder, N° 8, should not be continued so long, on account of the calomel which it contains, unless the horse be taken great care of, and the effects of the medicine carefully watched. Whenever it is observed to occasion sickness, griping pains, loss of appetite, or purging, it should be immediately discontinued, until these symptoms go off.

Laxatives.

THIS term is applied to opening medicines that operate very mildly, and produce so gentle a

stimulus upon the intestines, as merely to hasten the expulsion of their present contents, without increasing their secretions. Castor oil seems to be the best medicine of this kind, though the oil of olives or of linseed will produce nearly the same effect. The dose of the former is about a pint; but the latter may be given to a pint and a half. When a laxative ball is required, the following will be found useful:—

Succotrine aloes	½ oz.
Castile soap	3 dr.

Sirup enough to form a ball for one dose.

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3. *Blisters.*

Previous to the application of a blister, the hair should be cut from the part as closely as possible, the blistering ointment is to be well rubbed on it, and afterwards a small quantity is to be spread over the part with a warm knife. When the blister begins to operate, horses are very apt to bite the part, which, if suffered, might produce a permanent blemish. It is necessary, therefore, to guard against this accident by putting what is termed a cradle about his neck, or by

tying him up to the rack. When the legs are blistered, the litter is to be entirely swept away, as the straw might irritate the blistered parts.

BLISTERING OINTMENT.

N° 1.

Spanish flies, powdered . . .	½ oz.
Oil of turpentine	1 oz.
Ointment of wax or hog's lard .	4 oz.

Mix.

N° 2.

Oil of turpentine	1 oz.
To which add gradually,	
Vitriolic acid	2 dr.
Hog's lard	4 oz.
Spanish flies, powdered . . .	1 oz.

Mix.

N° 3.

Common tar	1 oz.
Vitriolic acid	2 dr.
Oil of origanum	½ oz.
Hog's lard	2 oz.
Spanish flies, powdered .	1½ or 2 oz.

Add the vitriolic acid gradually to the tar, and then the rest of the ingredients.

Remark.—The blister N° 3 is remarkably useful in removing enlargements of the back sinews or windgalls. It is necessary to be very careful in mixing the vitriolic acid with the tar; for, unless they are intimately incorporated, the acid will act as a caustic upon the skin, and produce ulceration. I have seen horses suffer severely from this, particularly when in blistering the legs it has been applied also to the back part of the pastern, or to the heel, a part that should always be protected from the action of the blister, by having some hog's lard smeared over it; being so irritable, that a blister sometimes causes ulcers, which in this part are difficult of cure. Sublimate is often recommended as an ingredient in blisters, but it is very apt to *ulcerate* the skin, and leave a permament mark or blemish. I have therefore omitted it in the above formulæ; but in cases of bone spavin, in which severe blistering is necessary, it may be employed with advantage. I have for some time employed the following blister for common purposes, and find it more convenient than the others.

N° 4.

Hog's lard.	6 oz.
Venice turpentine . . .	4 oz.
Bees' wax.	2 oz.
Yellow resin	1 oz.
Oil of origanum	½ oz.
Powdered cantharides . .	3 oz.

Melt the first four ingredients; and when removed from the fire, and not too hot, stir in the oil of origanum and cantharides: continue stirring until cold. Should this blister become too hard in winter, it may be softened by rubbing it with a little oil of origanum or turpentine, in a mortar or on a slab.

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4. *Fomentations.*

FOMENTATIONS are commonly made by boiling wormwood, southernwood, camomile flowers, and bay leaves in water, so as to make a strong decoction, which, being strained off, is to be applied as hot as it can be, without giving pain to the animal, by means of large flannel cloths. The efficacy of fomentations depends in great measure on their use being continued for a con-

siderable time together, and being frequently repeated.

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5. *Poultice.*

THE following mixture will be found useful as a common poultice: Fine bran one quart; pour on it a sufficient quantity of boiling water, to make a thin paste; to this add of linseed powder enough to give it a proper consistence.

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6. *Rowels.*

WHEN these are used with a view of relieving internal inflammation or fever, it will be found useful to apply blistering ointment instead of turpentine, or the digestive commonly made use of, for this will produce a considerable degree of inflammation in a short time.

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7. *Clysters.*

A VARIETY of compositions have been recommended for clysters by those who have written on the subject, there being scarcely an article in the

Materia Medica, that has not been occasionally employed in this way. I have found, however, from considerable experience, that, for a common clyster, water-gruel is as efficacious as the most elaborate composition. When this cannot be readily procured, I have been in the habit of using warm water, and without perceiving any difference in the effect. Where a purgative clyster is required, from four to eight ounces of common salt may be added; and if any anodyne be wanted, or an astringent, let half an ounce of opium be dissolved in a quart of water-gruel. The best method of administering clysters is by means of a bladder and pewter pipe. If a clyster be employed for the purpose of emptying the large intestines, or of purging, the quantity of liquid should not be less than a gallon, or six quarts; but when it is used as an anodyne or astringent, from a quart to three pints of liquid will be sufficient.

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8. *Pulse.*

In the management of sick horses great advantage may be derived from attending to the state of the pulse, as we are thereby enabled to judge of the degree of violence of the disease, and the

probability there may be of recovery: we are in some measure assisted also by it, in ascertaining the nature of the complaint, and in the application of remedies.

In a healthy horse the pulsations are about 36 or 40 in a minute, and may be felt very distinctly either on the left side, or in an artery which passes over the lower jaw bone; in short, pulsation may be felt in every *superficial* artery. When the brain is oppressed, the pulse generally becomes unusually slow. In a case of water in the brain, which occurred lately, the pulse fell to 23 in a minute; in the progress of the disease, however, it became unusually quick.

When a horse appears rather dull, and does not feed properly, it is advisable to examine the pulse, and if he be found to exceed the standard of health, immediate recourse should be had to bleeding. By this timely interference many dangerous complaints may be prevented. When the pulse rises to 80 or 90 in a minute, there is reason to be apprehensive of danger; and when it exceeds 100, the disease frequently terminates in death.

CHAPTER IX.

Condition.

BY the term *Condition* is to be understood not merely a fat and sleek appearance in a horse; it implies also a proper degree of vigour, by which he is enabled to perform extraordinary labour, without being too much fatigued. Every defect with respect to condition must originate either in *disease*, or in bad *grooming*. Under the latter head must be comprehended feeding, exercise, and the general management of the stable: the former will include various disorders, which will be concisely described, and the most effectual means pointed out for their removal.

In treating of the anatomy and physiology of the internal organs, an explanation has been given of that curious process by which the body is nourished, and enabled to perform it's various functions with regularity. Thence it will appear, that, in order to produce that degree of vigour and general healthiness of appearance which constitute good condition, it is necessary that these organs should be in a state of health, and that no impediment should exist to the performance of their functions. This, however, sometimes hap-

pens; we shall therefore proceed to show the various imperfections which tend to prevent a horse from acquiring condition.

1st. *Tenderness in the mouth, preventing the horse from masticating freely.*—It sometimes happens that the molar teeth or grinders wear so irregularly, as to have sharp edges, by which the inside of the cheek is wounded: the pain which the act of chewing occasions in this case induces the horse to swallow some part of his food unbroken, which, being difficult of digestion, frequently passes through the body unchanged. This defect is particularly inconvenient in horses that are separated from others by *bails* only*: as in barracks their more active neighbours have an opportunity of sharing their allowance. This complaint may be removed by rasping down the sharp edges of the teeth, for which purpose there are files made by veterinary instrument makers, and by applying to the wounded cheek the following mixture:—

Powdered alum	½ oz.
Honey	2 oz.
Vitriolic acid (strong). . . .	12 drops.
Infusion of roses	3 oz.

Mix.

* See farther remarks on bails in the subsequent section "The Stable."

It will be necessary, until this defect is completely removed, to give the horse broken corn, which may be more easily digested. It has sometimes been found necessary to remove a projecting tooth before the horse can be relieved, for which purpose a large strong tooth instrument is made.

When young horses are cutting their teeth, the mouth sometimes becomes inflamed and tender. This is another circumstance which may impede mastication, but is easily removed by washing the inflamed parts frequently with the above mixture. Should a slight degree of fever supervene, bleed moderately, and give a dose of the fever powder. The corn which is given should be either softened by steeping it in boiling water, or be broken in a mill.

The lampas is said to be another impediment to feeding (see *Lampas*), and is therefore removed with a red-hot iron. This operation is certainly performed much oftener than is necessary.

2d. *Weakness of the stomach or bowels.*—Horses that have acquired the vicious habit termed *crib-biting*, suffer great inconvenience from the waste of saliva which it occasions; the stomach, being in great measure deprived of this liquid, performs it's functions imperfectly: hence arise flatulent colic or gripes, general emaciation, and

debility. The remedy commonly employed is a leathern strap, buckled tight round the neck, immediately beneath the jaw. This however, is seldom effectual. A better method is to cover the edge of the manger, and every other part he can lay hold of, with sheep skins (the wool side outward), until the habit is destroyed. There are other causes by which the energy of the stomach may be impaired. Among these are excessive fatigue, bad food, defect in respiration or breathing foul air, taking too much food or water at once, or at any improper time, boîs, fever; in short, the stomach is so important an organ in the animal system, that scarcely any part can be materially injured without affecting it in some degree; and whenever the stomach is hurt, the whole system seems to sympathise and partake of the injury.

Weakness of the stomach is sometimes very easily cured. The powers of nature indeed are often capable of restoring it's tone; at others we find the disease extremely obstinate, resisting the most powerful medicines. This difference depends upon the variety in the *causes* by which the weakness is induced. When it arises from loading the stomach with improper food, that contains scarcely any nutriment, such as straw, and where the horse has been fed in this way for a considerable time, the diet should be gradually changed to

one more nutritive. During the time we are making this alteration, it is generally necessary to give one or two doses of laxative medicine, joined with aromatics (see *Laxatives*), to prevent inflammatory infection of the eyes, lungs, or heels, or, according to the more fashionable language of grooms, to prevent *humours* from breaking out. Should the appetite appear deficient, the cordial ball will be found of great service, given occasionally. When excessive fatigue is the cause of the weakness, which we often find after a hard day's run with the hounds, nothing is so effectual as the cordial ball, particularly in old horses: it soon gives them an appetite, and renders them fit for work again much sooner than they would otherwise be. Where a speedy effect is required, the ball may be mixed with a pint of good beer or ale.

If a horse, after sweating from exercise or any other cause, is allowed to drink freely of cold water, the stomach is suddenly debilitated, and the whole system is affected in consequence: hence arise flatulent colic, suppression of urine, shivering, quick pulse, and other symptoms of fever. (For the remedies, consult the *Index*.)

The stomach sometimes becomes weak gradually, and without any apparent cause. This is first indicated by the appetite failing, which is

soon followed by general debility, emaciation, and an unhealthy looking coat. The most effectual remedies in this case are the tonic balls and a nutritious diet; corn should be given more frequently than usual, but in small quantities; and a little malt on these occasions is extremely useful. The stable should be well ventilated, but not cold; regular exercise will also be very beneficial, and should never be omitted. It should be understood, however, that, although exercise tends to promote *strength*, if carried beyond the animal's power, it becomes a cause of debility: it is highly necessary, therefore, when a horse is in a state of weakness, to take care that his exercise is but moderate.

Worms in the stomach and bowels are a frequent cause of leanness and debility in horses; and while they exist, every exertion to promote condition will be ineffectual. (See *Worms.*) A defect in the organs of respiration will also produce weakness and emaciation.

If the blood be not duly supplied with that vivifying principle, which is derived from the air by breathing, a greater or less degree of debility must be the consequence; hence a want of tone is always observable in the stomach and bowels of broken winded horses, as well as a deficiency in the muscular power in general. The same evils

will result from keeping a horse in too close a stable, where the air does not contain the usual proportion of this principle.

3d. *Imperfection of the liver or pancreas, or obstruction in the tubes or ducts, by which their respective juices are conveyed to the bowels.* (See *Anatomy of Internal Organs.*) The liver is not often diseased in the horse, unless it be from internal inflammation. When the exterior surface of the bowels, or stomach, is attacked by inflammation, it will spread, if not speedily checked by bleeding, &c., to the surface of the liver, and other internal parts; and when horses die from this disease, which they often do, from improper treatment, the liver is generally found inflamed or mortified throughout it's whole substance: but this is an acute disease, and therefore not connected with the present subject. (See *Inflammation of the Liver.*) It sometimes happens, however, that a horse becomes weak and lean, either from a deficiency or a redundancy of bile. In the former case, digestion will be imperfect, and the horse frequently costive; the appetite will be bad, the animal languid and sluggish, and generally hidebound, the coat looking rough and unhealthy. The best remedy, in this case, is to give small doses of calomel, soap, and

aloes, as recommended in jaundice, so as to keep the bowels in a more open state; or, if the disease have existed some time, give in the first place a mercurial purgative, and afterward the following alterative:—

Calomel	1 scruple.
Aloes	1 dr.
Cascarilla powdered, and rhubarb, of each	2 dr.
Ginger	1 dr.
Castile soap	3 dr.

Sirup enough to form a ball, to be given every morning for five or six days, unless it occasions purging, in which case it is to be discontinued for two or three days.

The horse's diet should be light and nutritious, consisting of ground oats, carrots, malt, &c.: regular exercise is of great use. In the spring or summer, a run at grass is the best remedy. When there is too much bile formed, it occasions a loose state of the bowels, which causes the horse to become weak and thin. This complaint depends upon increased action of the liver, which generally ceases in a short time, without the aid of medicine. Should the purging continue, so as to re-

duce the animal's strength, the following medicine may be given, and assisted by a light nourishing diet, and very moderate exercise:—

Powdered columbo root . . .	2 dr.
Cascarilla powdered	1 dr.
Prepared natron	2 dr.
Opium	½ dr.

To be given every morning.

There are no external appearances, by which a diseased state of the pancreas can be ascertained, though it is probably sometimes a cause of ill condition. There is reason to believe, that want of condition depends, in some cases, upon an imperfect action of the lacteals, or those delicate vessels which convey the chyle, or nutritious parts of the food, into the blood. All the internal surface of the bowels is covered with very minute orifices, which are the mouths of the lacteals, and are supposed to be always open, to receive such parts of the digested food as are destined for the nourishment of the system. It is not improbable, that these minute orifices may sometimes be obstructed, or that the lacteals may be deficient in energy. Therefore, when a horse continues thin and ill-conditioned, without any apparent cause, this may be suspected; and the success we have

often met with in such cases, by giving a mercurial purgative, joined with a moderate stimulant, or stomachic medicine, seems to justify the opinion. The following formula may be employed on this occasion:—

Barbadoes aloes	½ oz.
Rhubarb	2 dr.
Calomel	1 dr.
Ginger	1½ dr.
Oil of caraways	10 drops.
Castile soap	2 dr.

Sirup enough to form a ball.

I should have observed before, that we sometimes meet with horses, particularly those of the blood kind, that have an almost habitual looseness or diarrhœa; and some that cannot bear even moderate work, or even drinking freely of water, without becoming loose in the bowels, and consequently weak and faint. Such horses are generally observed to sweat much, with the most moderate exercise, and sometimes when standing in the stable. This complaint is sometimes merely temporary, and is most likely to happen in the early part of spring, or about September and October; at which period some changes are generally taking place in the coat, by which the

bowels, and often the whole system, are rendered irritable and weak. In this case, the symptoms generally disappear with the cause; but, as a horse may remain in this situation a considerable time, and be unfit for work, it is advisable to call in the assistance of medicine. The first medicine to be given is a stomachic laxative, and after that the tonic ball. The horse should be clothed moderately, and exposed as little as possible to a current of air: but the stable should be well ventilated, and his water at the summer temperature, that is, about fifty degrees by Fahrenheit's thermometer. His exercise ought not to exceed a walk: but he may be taken out twice a day, if the weather be favourable. With respect to those horses that are habitually weak, or *washy*, as it is termed, becoming loose and weak from moderate work, or other trifling causes, there is no great chance of radical cure: but the animal will derive great benefit from medicine and care, and often be enabled to do his work with spirit, and without much inconvenience. The proprietor of such horses should always be provided with the following cordial, which should be given, not only when the looseness and weakness actually are present, but at any time when considerable exertion is required of him. If he be wanted for a journey, or a day's hunt, let him have a ball a little before he sets off, and another when he returns.

If the horse be very young, it may be worth while to attempt a radical cure, by a long run at grass. Horses of this description require great attention from the groom: they should never be exposed to the air without clothes, unless in the hot days of summer. Their water should be always at summer temperature, and given in small quantities often. Their food should be easy of digestion, their oats and beans given in a broken or bruised state, and their daily allowance should be divided into four or five feeds. Their hay should be of the best quality: mow-burnt hay is particularly injurious. A brisk circulation should be kept up in the skin and extremities, by frequent whisping the body, and hand-rubbing the legs. Moderate exercise is necessary; and the horse should always be attended to the moment he comes into the stable, either from work or exercise. (See *next chapter.*)

STOMACHIC PURGATIVE.

Barbadoes aloes	3 dr.
Rhubarb	2 dr.
Ginger.	1 dr.
Cascarilla	2 dr.
Oil of camomile	10 drops.
Prepared patron	3 dr.

Sirup enough to form a ball for one dose.

TONIC BALL.

Salt of steel	½ oz.
Columbo root	3 dr.
Cascarilla bark	2 dr.
Opium.	1 scr.

Sirup enough to form a ball for one dose.

Remark.—Arsenic is an excellent tonic, but must be given with caution, and in small doses. (See the author's second volume, or Materia Medica, where a great variety of formulæ for tonics are given.)

CORDIAL BALL.

Caraway seeds, *recently* powdered .	2 dr.
Winter's bark, powdered	3 dr.
Prepared chalk	2 dr.
Opium	½ dr.
Oil of anise-seeds	20 drops.

Sirup enough to form a ball for one dose.

HAVING given a short account of the diseases or imperfections, which prevent a horse from acquiring Condition, it remains for us to point out what kind of Stable-Management, or grooming, is most conducive to his attaining it; and as

a good stable is the first thing to be attended to, and is generally allowed to have considerable influence on the health and condition of horses, it will not, perhaps, be thought superfluous, if we say a few words on this subject.

The Stable.

In the construction of a stable, there is, perhaps, no circumstance more deserving attention than that of ventilation, or of having contrivances for the ready admission of fresh air, and for the escape of that which has been rendered impure by breathing; and it is really extraordinary that so little attention should have been paid to so important a circumstance. Grooms in general make a point of closing every aperture they can find; and if, at any time, they are prevailed upon to open a window, it is commonly so small, and so inconveniently situate, as to be but of little service. Let any one for a moment consider how foul an atmosphere must be produced, in a close stable, in which several horses are kept, by the constant exhalation of unwholesome vapours from the litter, by the steams of perspiration from the skin, and by noxious airs from the lungs: and

he will not be surprised at the long catalogue of diseases, to which this improper treatment must subject these useful animals.

If a doubt remain in the mind of any one, as to the impropriety of such close stables, let him enter one early in the morning, on it's being first opened, and he will experience such a painful sensation in the eyes, and so violent a cough, as will afford him the most convincing proof of the noxious and stimulating nature of such an atmosphere; yet such is the obstinacy and ignorance of grooms in general, that they cannot be prevailed upon to abandon this injurious practice. Even at this time, stables are generally built too low, and unprovided with effectual means of ventilation.

A stable should be as lofty as it can be made conveniently, at least twelve feet; the foul air will then circulate in the higher parts, and the animal will not be constantly breathing an unwholesome atmosphere, which he must do when the ceiling is scarcely higher than his head. Proper apertures must be also made in the ceiling, communicating with the atmosphere by square wooden tubes, so contrived as not to admit the rain into the stable; the foul air and other unwholesome vapours will then readily pass off, while a proper quantity of fresh air may be admitted by means of windows. The next circumstance to be attended to

is nearly connected with, and not less important than, ventilation; namely, the so constructing a stable, as to be able to regulate it's temperature, or keep the air at any degree of heat that may be thought proper. It is generally allowed, that a uniform temperature in a stable is very desirable; and it is certain, that many of the diseases of horses are caused by sudden changes in this respect. Even slight variations of temperature, if frequent, are injurious; yet few stables are to be found, where this inconvenience is effectually guarded against. To accomplish this desirable purpose, the windows should be in different sides, so that when a cold wind blows from any point, it may be shut out, while fresh air is admitted by the opposite window. There should be several of the apertures we have described in the ceiling, that they may be occasionally shut, either wholly or partially, so that, by means of these and the windows, the temperature can, at any season, be easily regulated, according to the weather, or state of the horse's health, more accurately if a thermometer be kept—an instrument which appears to be a necessary appendage to a well-conducted stable. If, during the cold days of winter, the contrivance we have proposed should be found insufficient to raise the temperature of the stable to the desired point, the air may be easily warmed to any de-

gree, by means of stoves placed on the outside, with iron chimnies passing through the stable.

Light is also a thing of much importance in the construction of a stable; and for the purpose of admitting it readily to every part, the windows should be large and properly placed.

There is no doubt that the eyes of horses are often injured by dark stables; and when a horse is just taken from a dark situation, it is easy to perceive that light at first irritates the eye, and gives pain; and this is more remarkable when he is brought suddenly into the sunshine; nor is it to be wondered at, that so delicate an organ as the eye should suffer materially from the frequent repetition of this sudden change.

Though a light stable is desirable, the sunshine should not be allowed to fall on the eyes of a horse as he stands in his stall; nor should the walls or ceiling be of a white colour, as, under such circumstances, the eyes would be over stimulated and rendered weak; and when it is considered how liable horses are to diseases of these organs, and how frequently they terminate in blindness, no one will think any circumstance tending to their preservation too trifling to be noticed. With regard to the best colour for the walls and ceiling, a stone or dove colour is perhaps to be preferred, and may be made by mixing a little

lamp-black, ivory-black, or blue-black, with the common white-wash.

The door should be larger and higher than we usually see it, for horses are very liable, in passing through a narrow or low one, to strike their hips or heads; I have seen some troublesome accidents happen in this way; besides, even if the hair be struck off about the hips, it is thought a blemish, because it may not grow again; or if it do grow, the hair may be white.

In fitting up the interior of a stable, particular attention must be paid to the size of the stalls, which should not be less than six feet wide, and the sides sufficiently high to prevent any sort of contact or communication between the horses. I know it will be urged as an argument against this, that they are sociable animals, and thrive better with a companion than when alone; this is certainly true: but, on the other hand, I am convinced, from long observation, that horses do not feel themselves in solitude, when they are thus prevented from touching or playing with their neighbours; besides, if we consider the numerous accidents that happen from low stalls, how frequently they kick or bite, and otherwise injure each other, there can be no doubt, I think, of the superior advantage of high stalls. At this moment, I have under my care a fine mare, who,

from kicking very high, got her hind leg over the stall, and has received a deep and extensive wound, which will probably prove fatal. The stalls should also be of considerable depth, that a horse may not, by drawing back, have the power of kicking those in the adjoining stalls. The method of separating horses by means of bails, or poles, suspended by chains, I think very injudicious; the only recommendation it can possibly have is the little expense that attends it, and it's allowing a great number of horses to stand in a stable. I am convinced, however, from what I observed, during the time I had the honour of serving in the royal dragoons, that, notwithstanding these recommendations, they are really in the end more expensive to government than stalls would be; scarcely a day passing without some accident happening from the bails: many dangerous, and some fatal wounds were occasioned by them. I once saw a horse break his spine, or back bone, by endeavouring to rise while under the bail; and several horses lost their sight from being bitten in the eye: but the most serious inconvenience perhaps attending bails, is the impossibility almost of feeding every horse equally; some horses feeding very slowly, and others so expeditiously as to devour, as well as their own, great part of their neighbour's allowance, in a short

time. To this may be added, the facility with which contagious diseases are communicated, the disturbance a horse is liable to when fatigued, and the difficulty of lying down quietly.

The floor of the stall should be made of hard brick, as a more equal surface is then formed than can be obtained by paving with pebbles. Very little declivity is necessary to drain off the urine; and as great inconvenience sometimes arises, from suffering a horse to stand in a stall where the fall is considerable, creating unnecessary exertion in the muscles of the hind leg, and keeping the ligaments constantly in a tense state, it has been recommended to make the drain in the middle of the stall, whereby the hind and fore feet of the horse might stand on a level. In whatever way, however, the stall is made, it should be carefully cleaned once a day, that none of that putrescent matter may accumulate which generates ammonia, or that pungent vapour which is so abundantly found in close filthy stables. An iron rack is preferable to one of wood, being more easily kept clean, and furnishing no splinters; which, where wooden racks are used, sometimes injure the mouth. The manger may be so contrived, as to slide into the wall like a drawer, and then, while the groom is wisping him, he would have nothing to lay hold of with

his mouth, by which practice horses often become crib-biters. The height both of the rack and manger should be such as to enable the horse to feed with the greatest ease: the former is sometimes made so high, that the horse is obliged to exert the muscles of his neck considerably in order to reach it; and this has been so placed, under an idea of it's having a tendency to make him carry his head more gracefully: it is more probable, however, that the only effect of it is to make the horse uncomfortable while feeding. It has indeed been lately recommended, as the best plan, to place the racks on a level with the manger, so that the horse may feed as he does in a state of nature; but I have had sufficient trial of this plan to be convinced of it's being, in every respect, less convenient and economical than the common rack.

Feeding, Exercise, and Grooming.

These are subjects of considerable importance, and require more attention than is commonly paid to them, as the health and condition of horses depend greatly on their being properly managed.

When a horse is in a state of nature, and using

only voluntary exercise, there cannot be a doubt that the green food, which the bountiful Creator provides for him, is better calculated than any other to keep him in perfect health, and satisfy his wants; but when he is domesticated, and employed in the various labours for which he is found so essentially useful, it is necessary to adapt the quantity and quality of his food to the nature of the work he has to perform: When, therefore, we undertake to get a horse into condition, it is necessary first to inquire for what kind of labour he is designed; whether it be for the turf, the chace, or the road. A horse, without doubt, provided he is in health, may have his condition and wind brought to the highest state of perfection it is capable of, merely by judicious management in respect to feeding, exercise, and grooming; and notwithstanding the great mystery and secrecy affected by those who make a business of training race horses, I will venture to affirm, that it is a very simple process, and easily to be accomplished by any one, who will attentively consider the principles we shall lay down, and not suffer him self to be influenced by an ignorant groom. It is a fact, not sufficiently known, perhaps, that the strength of an animal, or any part of the body, may be increased to a considerable degree, by means of exercise properly conducted; and

as breathing is effected by muscular exertion, it follows that the strength or perfection of this function, or, as it is commonly termed, *good wind*, must depend on the strength of those muscles by which breathing is performed: and by keeping in view this single principle, we shall do more for the improvement of a horse's wind, than we could by learning all the mysteries of training. In order to have a clear idea of the method of getting a horse into high condition and good wind, let us suppose him just taken from grass; it being understood, that every horse, who works hard during the other parts of the year, will in summer be allowed this necessary relaxation; without which the feet, as well as the sinews, joints, ligaments, &c., of the limbs, will be liable to suffer materially; and not unfrequently the general health of the animal is injured by such privation. But should any one be so situate as to be unable to procure this renovating indulgence for his horse, he must endeavour to substitute for it a large airy stable, where the animal may be turned loose. If he cannot get fresh vegetable food, such as lucerne, vetches (tares), clover, &c., he will find carrots a useful succedaneum during this time of rest. The horse should be allowed to drink frequently; and, if he be not immoderate, he may be suffered to drink as often and as much

as he pleases. He should be fed sparingly with oats; and on no account be allowed beans or any thing of the kind. The best general diet of the dry kind is, perhaps, a mixture of oats, chopped hay, and bran; to be given alternately with green food; or, if a sufficient quantity of green food can be procured, very little dry meat will be necessary. This treatment will serve in some measure as a substitute for a run at grass, provided the stable be large and airy. The light also should be freely admitted; and, if a convenient yard be adjoining to the stables, the horse may be suffered to run in and out at pleasure: but if there be nothing but the stable for him to run in, it will be proper to walk him out quietly every morning and evening, allowing him to drink freely in a running stream or river: the feet, during this time, should be kept cool and moist, for which purpose they may be stopped daily with a mixture of soft clay and cow-dung. When a horse is taken from grass, or from the situation and treatment we have just described, in order to be got into a condition for racing, hunting, or the road, the first object of attention is to bring about the necessary change in his food, and other circumstances, as gradually and with as little inconvenience to the animal as possible. If he be taken from grass, let him be put at first into a large airy stable, and suffered

to exercise himself in it. Let him drink frequently; and, instead of depriving him suddenly of his green food, allow him at first some carrots, with bran, and a moderate quantity of oats. He should be walked out once a day at least. His allowance of oats should be gradually increased, and that of bran and carrots in like manner diminished, until the latter is wholly discontinued. If he be a large drinker, he should be allowed but a moderate quantity at once; but at all times, and in almost all circumstances, it is proper to allow a horse water four times a day: which, instead of oppressing his stomach, or injuring his wind, will facilitate digestion, and materially conduce to the preservation of health, and the improvement of condition. I am aware of the prejudice that exists against this practice—that it is supposed to give a horse a large belly, and render him unfit for galloping any length of time, without endangering his wind. I am convinced, however, not only by my own experience, but by that of some experienced sportsmen also, that, so far from injuring a horse in any one respect, it is extremely beneficial; and that when a horse is allowed to drink four or five times a day, he is not inclined to drink much, and often does not drink so much in the twenty-four hours, as one that is allowed to drink only twice a day as much as he pleases.

As the horse's allowance of oats is increased, so should his exercise be; and if this be properly managed, there will be no absolute necessity for bleeding or medicine. It is necessary, however, to observe the horse carefully during the time we are increasing his allowance of oats, and diminishing that of carrots and bran; and if he appear dull or have a cough, however trifling, it indicates an inflammatory disposition of the body, and points out the propriety of moderate bleeding, or a laxative. But under proper management I do not think such symptoms would ever take place, though they almost always do when a horse is changed from grass to a close stable and dry food too suddenly; and in such cases both bleeding and purging are indispensably requisite to prevent the occurence of very serious diseases. It is from this circumstance, perhaps, that the absurd custom of giving exactly three strong doses of physic, as a necessary preparative, took it's origin. When a horse has been taken from grass about a week, I think it advisable to give him a very mild purgative, such as N° 1 (see *Physic*); not that I am convinced of it's being absolutely necessary, but because it cannot do any harm; and if the horse have been fed too liberally, or not exercised sufficiently — or should the stomach and bowels be out of order, or have any worms in them — a

mild purgative will be of great service. It is on this ground that I always recommend two or three doses of mild physic during the time a horse is getting into condition; but I have seen so many instances of the injurious effects of the strong physic recommended in many books of farriery, and commonly given by grooms, that I think it necessary to advise the reader never to suffer his groom or smith to prepare or prescribe a dose of purging medicine. That such strong doses are often given without any immediate bad effect is no proof of their innocence, still less of their utility. I can truly assert, that I have seen many horses quickly destroyed by strong physic, and a great number that have never perfectly recovered from the debility it occasions*.

* A valuable blood-colt was attacked with colic, which appeared to be of the flatulent kind, and, though violent, not dangerous. The usual remedies were ineffectually employed; and it was found, in attempting to give a clyster, that the internal coat of the gut was so loose and so enlarged, that there was no possibility of injecting it: the colt died about sixteen hours after the attack. On examining the body after death, all the bowels were found nearly healthy, except the *rectum*, or last gut, near it's termination, in which the inner coat was so loose and large, that the cavity was nearly obliterated, and scarcely any passage left for the excrement. The internal sensible coat of the stomach appeared also in a diseased state, being very tender, and easily separated; but it was not inflamed. About a

During the first week of the horse's being taken into a stable, walking exercise is most proper; but after this it may be gradually increased to a trot or canter; and if the exercise occasion any degree of perspiration, he should be carefully cleaned, and otherwise attended to, as soon as he gets into the stable.

By thus gradually bringing a horse from a state of nature, that is, from the open air and green food, to a comfortable stable and dry grain, he will be in little danger of those troublesome diseases, which are often the consequence of sudden changes, and of a different kind of management; and by duly proportioning his exercise to the nutriment he receives, and by gradually bringing the muscular system to that degree of exertion for which the animal is wanted, there is no doubt that his wind, strength, activity, and general condition, will be brought to the highest state of perfection it is capable of attaining. In describing the general management of horses in the stable, we

week after, I was accidentally informed, that the man who had the care of this colt, and was about to train him for the turf, had given him three doses of physic; and that the "first had operated so well, that he thought the colt would never have ceased purging." This was nearly the man's expression, which he had communicated, in the way of conversation, to a groom, before the colt was taken ill.

think it necessary to be very particular, as there are many apparently trifling circumstances which have considerable influence on the horse's health, though generally little attended to.

Horses employed in hunting, mail or stage-coach horses, in short, all that are obliged to undergo great and rapid exertion at certain periods, require a different treatment from such as work more moderately. The former have occasion for lying down as much as possible, that the muscles may the more readily recruit their strength. But the latter do not require so much rest in a recumbent state, and suffer no inconvenience from standing during the day; therefore their litter should be removed every morning, and shook up in the open air. The advantages of this plan are considerable, though it may be thought, by knowing grooms, an unnecessary trouble. The feet will be thus kept cool; and the hoof will not be so disposed, as it commonly is, to contract and shrink; for straw, being a bad conductor of heat, causes the feet to become too hot; in which state the horny matter has always a tendency to contract; hence arise sand-cracks, thrushes, &c. Unless a horse has thin, flat soles, it is always proper to *stop the feet*, as it is termed, with a mixture of cow dung, beaten into a smooth mass with a little fine clay, and a small proportion of

pot-ash. The feet should be examined daily; and if the soles should appear to be softened too much, that is, if the horn bends, or gives way in the least under the thumb, by the strongest pressure we can make, the stopping must be discontinued.

Horses that have been accustomed to stand on litter during the day, sometimes feel a difficulty in, or reluctance to staling, when they are deprived of it. In such cases, a little straw should be thrown under the belly, so as to prevent the urine from splashing about their legs.

The best food for horses that work hard is oats and hay, with a moderate quantity of beans. The latter, however, should not be allowed, unless the horse's work be considerable, as under moderate exertion they dispose the system to inflammatory complaints, such as coughs, inflamed eyes, &c. I am convinced that horses, whose labour is severe, are often injured by being stinted in water, particularly when they are allowed a large quantity of food. It is a common practice with waggoners, when their horses come in from a long and fatiguing journey, their strength almost exhausted by long continued exertion and sweating, to offer them immediately an unlimited quantity of food, and very little (most commonly not a drop) of water. Under such circumstances, the stomach is not able to digest the food taken

in; and I firmly believe that the staggers are often the consequence of such management. When a horse comes in from a long journey, he should always be allowed a small quantity of water before he is fed; and if he be allowed a little immediately after feeding, it is more likely to promote digestion, and prove beneficial, than to injure the animal. It is certainly a good plan, to give horses a moderate quantity of water just before the end of their journey: and I am satisfied that, by allowing them to sip a little water several times, during a long journey, particularly in warm weather, they are refreshed and invigorated, but never injured. When beans are given to a horse, they should always be broken; and it is probable that oats would be more nutritious in that state. A horse that works moderately does not require more than a peck of good oats, and about twelve or fourteen pounds of hay in the twenty-four hours; but large draught horses require a greater quantity both of oats and hay.

Horses employed in hunting, or for expeditious travelling, require great attention as to grooming, feeding, &c. Their allowance of hay should not exceed twelve pounds in the twenty-four hours; and it should be divided into three feeds — four pounds in the morning, two at noon, and the remainder at night. If a peck of oats be allowed

for the same period, it should also be divided into at least three feeds, giving water before each. When a larger allowance of grain is required, which must be the case with hunters, post-horses, &c., either the quantity of oats may be increased, or a certain proportion of beans may be added; but on no occasion should the quantity of hay be increased for horses of this description. I think there would be no danger, and perhaps great advantage, in allowing horses that work hard, either in hunting, posting, or in mail or stage-coaches, an unlimited quantity of good oats, with a moderate proportion of beans, provided it be given at several times, so that they may not load their stomachs, and injure the digestive power. If any other food be given with the oats and beans, which, however, appears needless, it should consist of clover-hay, cut like chaff, and a small quantity of fresh bran: the former, if not cut too short, will make him masticate his food more perfectly, and cause it to be digested more easily: but when a horse has any kind of cough, or is imperfect in his wind, neither cut hay, chaff, nor bran, should be given, as they are apt to irritate the throat, and excite coughing; and it is necessary also in this case to sift the oats, and shake the hay, so as to free them from dust, as this will often occasion a violent cough for a time, and aggravate the original complaint.

This will be more effectual, if the oats and hay be slightly moistened with water. Horses of this description being generally greedy of water, and so voracious as to devour their litter if kept from hay, it is advisable to muzzle them immediately after feeding. Some advantage also will be derived from giving them a moderate quantity of carrots now and then, particularly when their work happens to be but moderate, this vegetable being nutritious and easy of digestion.—Much has been said by writers on farriery, respecting the kind of water that is most wholesome for horses. The greater part seem to prefer pond water, where the bottom is composed of clay and chalk. It appears to me, that the most desirable kind of water is that which horses like best, provided it be not too cold; and I think it probable, that the ill effects, that have sometimes been produced by drinking certain kinds of water, have not been occasioned by foreign or impure matters contained in it, but merely by it's *coldness*; and I have found it the best plan to give clear river water in summer, and well water in winter; the latter being *warmer* in cold weather than water exposed to the air, and *colder* in summer. Some old author (I think Dr. Bracken) has expressed a suspicion, that the *hardness*, as it is termed, in well water, might occasion the stone or gravel. This

is a disease, however, that scarcely ever happens to horses, though we sometimes meet with stones of a large size in the *bowels*, formed gradually by the earthy matter taken in with the food; and if they were subject to calculous diseases, like men, it is almost impossible that the very small quantity of stony matter contained in hard water could have any share in their formation, being quite of a different nature from that found in the human bladder. It seems to be generally known, that brackish water (that is, water impregnated with saline matter, which is commonly met with near the sea) is rather injurious to horses, causing a rough dry coat, and loss of condition. This, perhaps, is not occasioned by any direct operation of the saline matter which such water contains, but by the horse not drinking a sufficient quantity, on account of it's unpleasant taste, for the purpose of digestion.

It is by no means advisable to accustom horses to warm water in winter, or to let the water stand many hours in a warm stable, so as to become nearly as warm as the air of the stable; as it makes the horse liable to the flatulent colic, or gripes, whenever he happens to drink cold water.

In sickness, and during the operation of physic, when it is absolutely necessary to allow warm water, it should never be discontinued suddenly.

the change should be brought about as gradually as possible. It is not a good practice to give horses nitre and other medicines in their water or food, because the dose cannot be accurately ascertained in this way; and the water, instead of promoting digestion, often has a contrary effect, exciting nausea, and weakening the stomach. It appears to me a better plan to water horses during their exercise, at a pond or running stream, than in the stable, except it is in winter; and even then it would be advisable, were it not for the inconvenience they are liable to suffer from standing in the water while drinking: but the common practise of galloping them immediately after is highly improper.

It has been asserted by some, that horses work better, and more effectually preserve their wind and condition, when allowed only a small quantity of water; or, as they express it, "it matters not how little he drinks, provided he feeds heartily." This opinion, like many others, has arisen from the foolish and mischievous practice of forming general rules upon a few facts, or a very limited experience: and too often, I fear, from examining those facts through the medium of prejudice. It must be granted, that we sometimes meet with horses that become loose in their bowels, and fall off in condition, sweating vio-

lently, and appearing fatigued from moderate exercise, if allowed to drink even two pails (five or six gallons) in the twenty-four hours; particularly when they are employed now and then in hunting, or any kind of violent exercise: but this is to be attributed to a weakness of constitution not often met with in horses, and points out to us the necessity of observing a horse attentively when we first undertake the management of him, in order to ascertain what quantity of water is most conducive to the preservation of his health and condition; and if we find a horse shivering, and his coat staring immediately after drinking freely, it is not to be hastily concluded, that he is to be allowed only a small quantity of water daily. In such a case, a very moderate quantity should be given at once, and the horse should be exercised immediately after, in which way he will generally be soon brought to drink a proper quantity in the course of the day without inconvenience. The best time for exercising horses is early in the morning, as soon as the stable is opened: during which time the stable-doors should be kept open, and the foul litter thrown out. As horses that work moderately do not require a bed in the day time, it will be advisable in such cases to remove all the litter from the stall, and expose it to the air; spreading only a small quantity at the back

part to prevent the horse from splashing his legs in staling. It will perhaps be thought unnecessary to exercise horses that work, particularly such as are employed in hunting or expeditious travelling: I think, however, they are always the better for it, provided it be done with prudence. It certainly is not proper to take out a horse for exercise, that is designed for hunting the same day; but in the intermediate days it should never be omitted; and if a horse's work be moderate, such as ten or twelve miles a day, a little exercise in the morning will enable him to perform it better. Horses of a full habit, or such as are subject to *humours* (see *Humours*), are greatly benefited by exercise, which, on such occasions, may be carried so far as to produce sweating. But great care is then necessary: they should be walked about for some time, that they may cool gradually; and as soon as they return to the stable, they should be well wisped, and their legs hand-rubbed. Swelling of the legs, grease, inflamed eyes, and other troublesome complaints, will be thus more effectually prevented than by bleeding every now and then; which, though it affords temporary relief, will gradually increase the disposition to disease. The exercise which a horse enjoys, when kept loose in a large stall, is particularly beneficial, and should always be allowed when the stable is sufficiently

large to admit of it; instead of being kept constantly in one position, his head tied to the manger, and his fore legs generally higher than his hind legs: he can then turn himself about, and enjoy comparatively a state of liberty.

In summer, or whenever the weather is temperate, horses should be cleaned in the open air when they return sweating from work or exercise: for, if put immediately into a warm stable, they often continue to perspire so long, as to suffer some injury from it. The common practice, however, of washing the legs with cold water should never be allowed, unless the horse be exercised, or have his legs well rubbed immediately after. It is superfluous, perhaps, to point out the impropriety and danger of plunging a horse into a river while sweating from severe exercise, a practice commonly adopted by proprietors of post and stage-coach horses: that it is often done with impunity must be granted; but it is probable, that many of them suffer from the treatment, though the ill effect is not immediately observed *.

* It appears, from the experiments of Dr. Currie, that, when the heat of the skin is above the natural degree, the application of cold water is highly refreshing and invigorating; but when the heat of the system has been in some measure exhausted by continued exercise and perspiration, it will generally produce considerable debility; and in the

When a horse returns from exercise or work, his feet should be carefully picked out and washed: and if the hoof be dry and brittle, feeling hot, and appearing contracted, a mixture of cow-dung and soft clay should be applied to the soles. The horse's heels also require attention; and if any small ulcer, or *crack*, as it is termed, be observed, or if they be tender, swollen, or smell offensively, the proper remedies should be immediately applied. These things, however, very rarely happen when the groom does his duty. It should be remembered, that when a horse is changing his coat, that is, about the latter end of September, and begining of October, he is more susceptible of cold than at any other time; and as the coat then falls off so readily, the curry-comb should be laid aside, and the horse exposed as little as possible to cold or rain. Moderately warm clothing, and frequent hand rubbing to the legs,

human body the most dangerous consequences have ensued from it. The same observation applies to cold water taken into the stomach, which on such an occasion has been known to cause sudden death. It is probable, therefore, that many of the diseases of these poor animals arise from the debility which this treatment occasions; and perhaps the mischief would be greater, were it not that the river or pond is generally at a little distance from the stable, so that they get some exercise immediately after their immersion, and that the stable is generally very warm.

will be found highly useful at this time. When these precautions are neglected, horses often become weak and unfit for much work, sweating profusely from moderate exercise, and sometimes purging: troublesome cough and staring coat generally accompany these symptoms. The common remedies on this occasion are bleeding, or strong purgatives, which are sure to increase the debility; nor are antimonials, or medicines that act upon the skin, proper to be given. The most effectual medicines are those of the *tonic* kind, with moderate stimulants (see *White's Veterinary Materia Medica*); and when the bowels are loose, a small proportion of opium. These, however, will avail little, unless assisted by due attention to grooming. Though we have so strongly recommended ventilation in stables, it must not be inferred that a cold stable is desirable; horses seem to thrive most in one that is moderately warm. I have known old horses, that could not be kept in condition in a cold stable, even upon the highest feed, do well when removed to a warmer one: this, however, is the effect of habit; and it is probable, that if a horse were accustomed, from the time he is first taken up, to a cold stable, he would never require any other: but when from his youth he has been kept in hot stables, his body constantly clothed, and his sto-

much frequently stimulated by cordials, it cannot be supposed that he is able to endure cold. It is necessary, therefore, on purchasing a horse, to discover in what manner he has been kept, and whether he have been accustomed to any particular management; for instance, the custom of giving cordials to horses after a hard day's hunt, is often rendered necessary by the practice of keeping them without food or water on the morning they are so employed. In describing the peculiarities in the structure and economy of the horse's stomach, we have observed, that this organ is remarkably small, requiring to be supplied frequently with food. When a hunter, then, goes out with an empty stomach, and is perhaps kept out eight or ten hours without feeding, generally galloping great part of the time, the stomach is so exhausted on his return, that he has scarcely any appetite, and refuses his food, until the stomach is roused by a strong cordial: a habit is thus induced, and cordials, after a time, become as necessary to a horse accustomed to it, as spirit to a dram-drinker.

Yet there surely can be no danger in giving a moderate quantity of oats and water very early in the morning previous to hunting. If he have to walk four or five miles to cover, there can be no danger of his stomach being oppressed by the

time he arrives, nor a doubt of his performing better than he would otherwise have done.

Of the Age of a Horse.

The age of a horse may be discovered by certain marks in the front teeth of the lower jaw and the tushes, until the eighth year, about which time they are generally worn out. An experienced person can, however, after this period, judge of the age, with some degree of accuracy, by the countenance and general appearance of the animal, as well as by the length of the teeth, and form of the tushes.

Between the second and third year, a colt begins to change his *sucking teeth*, as they are termed, for others of a larger size and of a different form and colour. The *sucking teeth* are small, of a delicate white colour, some of them perfectly smooth on the upper surface: others have a small narrow cavity on that surface, but very unlike those marks of the *permanent teeth*, by which we judge of the age. The number of teeth in the front of the mouth are twelve, six in the lower and six in the upper jaw. (We take no notice of the molares, or grinders, as they are not concerned with this subject.) When a colt is

three years old, we may observe that the four front *sucking teeth* are lost, and that, instead of them, four others have sprung up, of a very different appearance, being larger, of a darker colour, and having a considerable cavity on the upper surface, and a small dark coloured groove in front: these are termed *horse's*, or *permanent teeth*. Between the third and fourth year, the four teeth next these are lost, and replaced, in the way we have just described, by horse's teeth; so that when a colt has completed his fourth year, there are eight horse's teeth observable, and only four colt's teeth, one at each extremity, or corner, as it is termed. About the middle of the fifth year these also fall out, and are succeeded by horse's teeth. The corner teeth of the horse, particularly of the under jaw, are different from the rest, being smaller, and of a shell-like appearance: their cavities are chiefly within, the upper surface being a mere edge; but about the end of the fifth year they are larger and more like the other teeth. It is generally between the fourth and fifth year that the tushes make their appearance, though sometimes earlier.—The tushes are four in number, and situate about an inch from the corner teeth; at first they are small, terminate in a sharp point, are rather convex on their external surface, but within have two concavities or

grooves, separated by a ridge. These, as well as the teeth, are gradually undergoing an alteration in their form, becoming longer, and losing the concavities on the internal surface. About the seventh year the concavity is considerably diminished, and in old horses the surface becomes convex, the tush acquires a round form, and the extremity, instead of being sharp, is quite blunt, as if the point had been broken off, and the new surface afterward polished. We must now return to the teeth, the appearances of which we have described, as far as the completion of the fifth year of a horse's age. After this period we judge of the age by the size of those cavities which we have described on the upper surface of the tooth: for the friction to which that surface is almost constantly exposed gradually wears it down, and at length the cavity or mark is totally obliterated. The marks in the upper teeth most commonly remain until the twelfth year, sometimes longer, but those in the under teeth are worn out about the end of the eighth year; we shall therefore confine our description now to the under jaw.

As the two front teeth are the first that make their appearance, it is obvious that their marks will be lost sooner than those of the other teeth; and if we examine the mouth of a horse that has just completed his fifth year, we shall

find, that they are nearly, and sometimes quite worn out: those in the adjoining teeth are about half their original size, while the marks of the corner or end teeth are perfect. At the end of the sixth year, the only cavities observable are in the corner teeth, and these are about half their original size: the tooth has at this period lost the shell-like appearance we have before described, and is not different from the other teeth, except in having a mark or cavity on it's upper surface. At the end of the seventh year, the marks of the corner teeth are also obliterated, and then the horse is said to be aged. We often find, however, that the marks of the corner teeth are not totally effaced at this period: a small dark coloured spot may be observed in most horses, until about the end of the eighth year. From this period we have no criterion by which the age may be ascertained, but it is said that the marks of the upper teeth will enable us to judge of the age until the thirteenth year; the marks of the front teeth being worn out when he becomes eight years old, those of the adjoining teeth at ten, and the corner teeth at twelve; but I cannot say how far these marks can be depended upon.

On the Management of a Horse during a Journey.

PREVIOUS to setting out on a journey, every precaution should be employed to bring a horse into as perfect a state of health as possible, as we thereby avoid much trouble and inconvenience. Should he be at all subject to grease, or swelling of the legs, a dose of physic is to be recommended, taking care to preserve the heels clean, and to keep up a brisk circulation in the legs by frequent hand rubbing. Should the feet of the horse be tender, it is necessary to inquire into the cause of that tenderness: if it arise from corns, let the directions be followed that are given under that head; if it proceed from flat and thin soles, apply tar to them, and let the horse stand upon a flat surface, without shoes, by which means they will be rendered thicker and more firm; and when he is rode let the concave shoe be made use of. When thrushes, or rottenness of the frog, are the cause of the tenderness, cut away the diseased parts, apply tar with a pledget of tow, and upon this place the *artificial* frog—the *natural* frog will, in consequence, soon become firm and solid, and the tenderness will be in great measure removed: if the thrushes be oc-

casioned by a contraction of the heels, which is frequently the case, it will then be necessary to rasp the quarters moderately; and should they appear to be too strong, wanting a proper degree of elasticity, keep the hoof constantly moist. Horses that travel during the winter are very liable to have their heels inflamed and cracked, as it is termed, unless great attention is paid to them in the stable. In cases where the heels are already thus affected, they should be washed with moderately warm water as soon as the horse gets in, and afterward carefully wiped dry with a soft cloth; if much inflamed, the astringent lotion is to be applied; and if there be any ulcers or cracks, use the astringent ointment, and let the alterative powder, N° 2, be given occasionally. When a horse's wind appears to be imperfect, he should not be allowed to fill himself with hay or water, and must be prevented from eating his litter, which horses of this description are generally inclined to do, particularly when stinted in hay: in this case, costiveness sometimes occurs, which alway increases the complaint. To remedy this, let a clyster and a few bran mashes be given. Too high feeding is also very prejudicial in these complaints, as any thing which tends to create a plethora, and determine too much blood to the lungs, is sure to aggravate the disease. To a horse

that purges or scours in travelling, and appears faint, sweating much with moderate exercise, give the cordial ball, the efficacy of which is sometimes increased by being mixed with a pint of ale or strong beer: if the complaint do not give way to this treatment, let the astringent ball be given.

As soon as a horse comes into the stable, let his feet be well cleaned, and all dirt or gravel carefully removed. It is a very common practice with ostlers, even in winter, to tie the horse up in the yard, that he may undergo the ceremony of having his heels washed with cold water. This should never be permitted during the winter, as many bad consequences may arise from it. During hot weather, when the roads are dry and dusty, allow a horse to drink a small quantity of water now and then, while on the road; this not only refreshes him considerably, but has the useful effect of cooling and moistening his hoofs, as he will generally be made to stand in the water while drinking, nor is there the least danger to be apprehended from it, unless he is rode very hard immediately before or after. In winter he should never be taken into the water, if it can be avoided conveniently.

Should the horse appear dull and lose his appetite, let him be bled moderately, and take a dose

of nitre with a bran mash; this, with a little rest, will soon recover him. It is a common practice, when this happens, to give cordials, which are very improper, and often do much injury to the animal, by bringing on a fever. Some horses are particularly subject to the flatulent colic, or gripes; this is often the case with *crib-biters*: on such occasions, it is advisable to be always provided with a remedy, and, as a ball is the most convenient form, I have given a recipe for the purpose. (See *Flatulent Colic, or Gripes.*) A suppression of urine, or great difficulty and pain in staling, is an accident that sometimes occurs in travelling; and in such cases a diuretic ball is commonly given, which, though sometimes successful, has often done mischief. The most effectual way of relieving the horse is by throwing up a clyster, and bleeding moderately: should there be no appearance of inflammation in the kidneys, a dose of nitre may also be given. The common practice of loading a horse with clothes, and keeping him in a close warm stable if he happen to take cold during a journey, is certainly improper, since he is liable to be frequently exposed to wet and cold in travelling. It is a well known fact, that animals are not hurt by being kept in any uniform temperature, whether it be hot or cold; and that their diseases more commonly arise from sudden changes, or frequent variation of temperature.

When a horse becomes suddenly lame in travelling, let the feet be carefully examined. Should the lameness be occasioned by a wound from a nail or flint, apply tincture of myrrh or Friar's balsam, having previously removed all dirt or gravel from it; and if the wound have been inflicted by a nail, let it be carefully opened to the bottom with a small drawing knife, and proper means used to prevent dirt from getting to it.

CORDIAL BALLS.

N° 1.

Cummin seeds, Anise-seeds, and Carraway seeds, of each . .	4 oz.
Ginger	2 oz.

Treacle enough to make it of a proper consistence for balls. The dose about two ounces.

N° 2.

Anise-seeds, Caraway seeds, Sweet fennel seeds, and Liquorice powder, of each .	4 oz.
Ginger and cassia, of each . .	1½ oz.

Honey enough to form them into a mass. The dose about two ounces.

N° 3.

Cummin seeds, Coriander seeds, and Caraway seeds of each . .	4 oz.
Grains of paradise	1 oz.
Cassia	½ oz.
Cardamom seeds and saffron, of each	2 dr.
Liquorice dissolved in white wine	2 dr.

Sirup of saffron enough to form a mass.

The dose about two ounces.

N° 4.

Powdered ginger	4 oz.
Powdered caraway seeds . . .	8 oz.
Oil of caraways and Oil of anise-seeds, of each	2 dr.
Liquorice powder	8 oz.

Treacle enough to form a mass.

APPENDIX.

Observations on Wounds.

IN the former editions of this work this subject was treated of rather concisely: farther experience has, however, convinced me, that the common method of treating wounds is so directly in opposition to reason and nature, as to render a detailed account of the proper mode of treatment indispensable.

Wounds of the human body, when inflicted with a keen instrument, are often cured, merely by bringing the divided parts into contact, and keeping them in that situation by means of suture (stitches), or sticking-plaster and bandage. In a few days nature completely reunites the parts without any inflammation or suppuration having appeared. This surgeons call *union by the first intention*, and is so desirable a method of healing wounds, that it is generally attempted, even under circumstances which render it's accomplishment doubtful. In the wounds of horses this

kind of union can scarcely ever be effected, from the difficulty of keeping the wounded part in a state of rest, and from the laceration and contusion with which their wounds are generally accompanied.

To render the subject more clear, we shall divide wounds into the following classes:—

1. Simple incised wounds.
2. Lacerated and contused wounds.
3. Punctured wounds.
4. Wounds of cavities.

Simple incised Wounds

Are those inflicted with a keen instrument, by which the skin or other parts are neatly divided, without being torn or bruised.

This kind of wound, however, seldom happens to horses: when they do occur, though there is little probability of effecting a *union by the first intention*, it should always be attempted; and if the divided parts cannot be kept together by sticking-plaster and bandage alone, the lips of the wound should be neatly sewed, so as to be held firmly in contact with each other, with waxed thread several times doubled; and if the situation of the wound will admit of it, a bandage or

roller should be afterward applied to assist in the accomplishment of this end, and render the stitches less painful. But how different from this is the practice of farriers: ignorant of the animal economy, and the wonderful power with which the Almighty has endued the animal system, of recovering itself when injured, and of reproducing flesh that has been destroyed, they officiously prevent this desirable union by putting *tents* (that is, lint or tow moistened with some stimulating liquid) between the lips of the wound, by which they are effectually hindered from cohering, however naturally disposed to unite. But this is not the only evil of the practice: in extensive wounds the injured parts are so irritated by exposure, and their applications, that mortification is sometimes the consequence. Far better than this would it be, to leave the wound to nature, merely keeping it clean, and, when the first inflammation has subsided and white matter appears, bringing the separated parts as near to each other as possible, and retaining them in that situation by means of bandage. By this method the wound would heal much more speedily, and the consequent blemish, or scar, would be considerably lessened. It is unnecessary to say more of the simple incised wound, for should the attempt to heal it by the

first intention fail, it becomes necessary to assist nature, as in lacerated wounds: still, during the whole cure of a simple wound, it is proper to keep the divided parts together as well as we can, which will be found more useful than any balsamic vulnerary or healing application, that the most expert farrier's receipt-book can furnish.

Lacerated and Contused Wounds.

THE wounds of horses are most commonly inflicted with some blunt instrument, and consequently the parts are rather torn asunder than simply and neatly divided: at the same time, the instrument is generally applied with such force, that the skin, flesh, &c., are considerably bruised; for example, when a horse falls upon his knees, is kicked or bit by another horse, in attempting to leap gets his hind or fore leg entangled in a gate, and in other such accidents. In these cases, the laceration and contusion are so considerable, that the kind of union before mentioned is totally impracticable: it is, notwithstanding, advisable to keep the divided parts together as well as we can, taking care to allow the matter which forms to escape freely, and avoiding the violent stimulating applications commonly used by farriers on

such occasions, which, to say the best of them, always increase the inflammation and danger, and obstruct the cure. I have seen a horse die in the greatest agonies, from a wound received in entangling the hind leg in a gate, by which not only the skin and flesh were excessively torn and bruised, but the stifle joint was also much injured. In this case, the fatal event and the excessive pain were undoubtedly accelerated and heightened, if not altogether occasioned, by the caustic applications of the farrier employed *.

* A short time ago I was induced by respectable recommendation to employ a practising farrier in our Veterinary Infirmary as superintending groom, under an idea, that he might be the more useful from being capable of applying poultices, fomentations, giving balls, &c.—Though, like his Vulcanian brethren, extremely ignorant, he appeared tractable and desirous of instruction; unfortunately, my plan of trusting in some measure to nature in the treatment of wounds and ulcers appeared to him to arise from negligence; and, in the excess of his zeal, during the time I visited my out patients, he endeavoured to compensate for my apparent omissions by his own industry. Finding several cases unusually obstinate, I was led to make some inquiry into the business, which was soon explained, when informed, that this indefatigable practitioner had used nearly an ounce of lunar caustic (*argentum nitratum*) in a fortnight. This man has since had the presumption to set himself up as a veterinary practitioner, and now deals out his caustics and opposes nature without control.

It has since appeared, that this man was induced to offer

In the treatment of extensive lacerated wounds, the first object is to remove any dirt, splinters, or

his services, by supposing, that such an employment would, after a short time, be considered by the public as a sufficient sanction for his practising the veterinary art.

The celebrated St. Bel, first professor of our Veterinary College, in his observations on veterinary medicine, justly remarks, "that at this time the art appears obscured and bewildered by the ill-placed confidence of the owners of horses upon the blacksmith of the parish, upon illiterate and conceited grooms, or upon a set of ignorant and presuming men, infinitely more dangerous than all the rest, who, arrogating to themselves the title of doctors, distribute their nostrums to the destruction of thousands, whose varied disorders they treat alike, without consulting nature or art, either about the cause or the effect.—Miserable animal! thou canst not complain, when to the disease with which thou art affected, excruciating torments are superadded by the unmeaning efforts of ignorant men, who, after pronouncing a hackneyed common-place opinion of thy case, proceed with all expedition to open thy veins, lacerate thy flesh, cauterise thy tinews, and drench thy stomach with drugs, adverse in general to the cure they engage to perform!"—So extensive is the mischief occasioned by this "ill-placed confidence" of which St. Bel speaks, and so serious an obstacle has it hitherto proved to the progress of veterinary science, that I must beg leave to make a short quotation from Mr. Richard Lawrence's ingenious publication.

"The necessity of long study in anatomy, pathology, and the composition of drugs, to qualify a practitioner in medicine, is universally acknowledged; and as the horse exists by similar laws, and is subject to many of the dis-

other extraneous matter, that may be in the wound; if a flap of skin hang down, of flesh be

eases incident to mankind, it cannot require much penetration to discover, that studies of the same nature must be absolutely requisite to constitute a good farrier: but if conclusions were to be drawn from the basis on which the veterinary system has hitherto rested, it would seem, that the science of farriery has been considered as a *natural gift*, and not in the least dependent on the tedious process of medical inquiry and investigation; for every blacksmith, groom, and stable-boy, not only conceives himself, but is often believed by his employer, to be fully competent to the important task of curing diseases, of the nature of which he is totally ignorant. Surely nothing can be more absurd than to imagine, that a groom, by having fed and cleaned a horse a few years, must consequently become acquainted with his diseases and their causes. It would be equally plausible to assert, that because he knows by ocular experience, that the sun rises in the morning and sets at night, he must be an astronomer.

"The majority of the affluent, to avoid the trouble of reflection, suffer themselves to be influenced, in matters of this nature, by men whose opinions on any other subject they would treat with the utmost contempt. Few things can be more affecting to a humane and contemplative mind, than the sufferings of a mute and patient animal, the estimable contributor to our pleasures and comfort, when affected with some violent disease, in which nature exerts her utmost efforts to relieve herself: but how must this scene of distress be heightened, could the proprietor be convinced, that the very men he applies to for assistance only aggravate the evil by their ignorance!"

The earl of Pembroke, whose judicious treatise on horses

nearly torn off, they should be carefully replaced, and never cut off, however unseemly they may appear to the farrier, unless so much bruised as to be irrecoverable. When the parts are so divided as to require considerable pressure to bring them together again, it is improper to sew the wound up, as the tendency of the parts to recede from each other would constantly keep the stitches upon the stretch, and so irritate the wound as to bring on excessive inflammation, and perhaps ultimately gangrene or mortification. The only thing to be kept in view in these extensive wounds is, to employ the most effectual means for keeping the inflammation within bounds, until suppuration takes place, which is indicated by the appearance of white matter, and the subsidence of the inflammatory swelling, and abatement of pain and fever. On many occasions, the parts may be brought carefully together, as near as can be

has been universally approved, seems to have been aware of the mischievous tendency of encouraging these illiterate pretenders, when he observes, "Whoever lets his farrier, groom, or coachman, in consideration of his having swept dung out of his stables for a greater or less number of years, ever even mention any thing more than water gruel, a clyster, or a little bleeding, and that too very seldom; or pretend to talk of the nature of feet, the seat of lameness, sickness, or their cures, may be very certain to find himself very shortly quite on foot."

without employing considerable force, and may be supported in that situation by a proper bandage. Whenever stitches are employed in such wounds, and drawn tight, they give excessive pain to the animal, and bring on a dangerous degree of inflammation: the violent pain often causes symptomatic fever, and, after all, the intention of employing them is not answered, as they always separate in two or three days, and leave the wound as open as at first, presenting a much more formidable appearance from the mischief caused by the increased inflammation, and the retention of putrid matter. After cleaning a lacerated wound with warm water, which, when it's situation and depth render it necessary, should be injected with a syringe, the divided skin, flesh, &c., should be carefully brought together, and secured as we have directed above *.

* The common practice of farriers in these cases is, to apply freely some stimulating spirituous preparation, such as spirit of wine and camphor, Friar's balsam (which is a solution of certain resins and balsams in spirit of wine), brandy, and many other things equally injurious: some of them use even a mixture of oil of turpentine, and acid of vitriol; and then, as if they were determined to do all the injury in their power, the wound is plugged up with a quantity of tow, moistened with the same stimulating preparation with which the wound was washed or syringed. A few days ago, I was desired to attend a horse that had met

If the horse be in good condition, and have not lost much blood from the wound, he should be

with a deep and extensive wound by entangling, it was supposed, his fore leg in a gate, while at grass: the farrier had been there before me; and observing a syringe in his hand, I inquired what liquid he had employed, and was told, "Brandy." Upon expressing my fear that so stimulating an application would do mischief, the farrier immediately replied, "There is no danger of that, for I put a little oil with it; and you know the one is *hot*, and the other *cold*." I could not but smile at the ingenuity of the explanation, but requested that nothing of the sort might be again employed.

The popular prejudice in favour of those spirituous or balsamic preparations, as they are termed, in all kinds of wounds, has been the cause of much mischief in veterinary, perhaps not much less in human, surgery. The credit they have acquired is owing to the wonderful property, with which the animal body is endued, of uniting parts that have been divided, merely by keeping them in contact with each other. Many astonishing instances of this have been related by writers on surgery; and it has been proved, that if even a tooth recently drawn be replaced in it's socket, it will soon become as firm as the rest. The spur of a cock, just cut off, being stuck into the comb, will soon adhere, and grow as it did upon the leg. A respectable author relates the case of a man who accidently stepped on a keen instrument, and nearly divided his foot; all the bones, tendons, &c., were divided except the bone going to the little toe; he bled profusely, and fainted, by which the hemorrhage was stopped. A surgeon then brought the divided parts together, and secured them with splints and bandage. The man was thoroughly cured in a short time, and the foot

bled rather freely: in other circumstances it will be proper to omit that operation, or take only a small quantity. A purging draught or ball should be given as early as possible, and the horse's diet confined to hay and mashes, or bran;

became as perfect as the other. Surgeons are now so convinced of the power of nature to heal simple incised wounds, when the divided parts are kept in contact with each other, without the assistance of any spirit, balsam, or salve, which they know rather impedes than expedites the cure, that a practioner would be laughed at, were he to adopt so absurd a practice: it appears, indeed, that balsams were first used on account of their glutinous quality in order to keep the parts more completely in contact: with the same view, white of egg, gum-water, and other things of the same nature, were employed. It is to be lamented that the public are still so prejudiced in favour of stimulating preparations, such as Friar's balsam, tincture of myrrh and aloes, and, above all, the famous Riga balsam, which is preferable from being less stimulating, that a veterinary surgeon can hardly venture to trust nature a little in the treatment of wounds, without being accused of negligence. It may be depended upon, however, that in every case of simple incised wounds, where these preparations have been thought to effect a cure, they have not in the least contributed to it: nature has been the restorer, in spite of the obstacles opposed to her efforts. Wounds that have degenerated into ulcers, either from bad management, or from the parts having been lacerated or bruised, often require the application of stimulants; but even in such wounds they are not to be employed, until the inflammation, which necessarily follows the injury, has subsided.

he may be allowed to drink freely and frequently, and must be kept perfectly at rest.

The wound should be cleansed once or twice a day, as may be found necessary, with water at blood heat; which, when the wound is deep, may be done more effectually by means of a syringe. The only external application necessary at this period is a fomentation. (See *Fomentation.*) When this plan is adopted, the inflammation, swelling, and fever, which always follow an extensive lacerated wound, will be much more moderate than it would otherwise have been, and in a few days will have subsided considerably; a white matter will then flow from the wound, and the horse will not appear to suffer much pain. When this has been accomplished, it is necessary to endeavour as much as possible to bring the divided parts together, and there will be less danger and pain from drawing the bandage with more force for this purpose. Warm water may still be used for cleansing the wound; but when the inflammation is quite gone off, some stimulating liquids may be employed, but these are unnecessary when the divided parts can be brough into contact. When this cannot be effected, or when there is a loss of substance, the wound cannot heal without the formation of new parts, and stimulants are often required to accelerate this process. At first, the weaker preparations are to

be used, such as dilute spirit, or a weak solution of blue vitriol: but when the healing process goes on slowly, the matter becoming thin, and losing it's white colour, the stronger stimulants, as tincture of benzoin, or even oil of turpentine, may be applied, and the constitution invigorated by a nutritious diet, such as malt and oats, or carrots; and when the discharge is very considerable and appears to weaken the animal, this is more particularly necessary, and must be assisted by medicines of the tonic kind, such as Peruvian bark, cascarilla, vitriolated iron, and sometimes porter or beer, and even opium; it is only in very deep and extensive wounds, however, where there is a profuse discharge, and constitutional weakness, that this treatment is required.

When wounds of this kind terminate fatally, it is generally from the violence of the inflammation and symptomatic fever causing gangrene, delirium, and total exhaustion. Our first and principal object, therefore, should be to restrain this inordinate inflammation by every means in our power; but farriers, ever in opposition to nature, generally destroy their patients in these cases; torturing the unfortunate animal by the application of violent stimulants, and even caustics; cramming into the wound hard tents, and persuading their employers that this cruel and absurd treatment will infallibly heal the wound.

When we have succeeded in these extensive lacerated wounds so far as to bring on a healthy suppuration, a discharge of white matter, and an appearance of new flesh sprouting up in various parts, in small granulations of a red colour, we may be satisfied that the danger is over.

At this period we may safely use more force in bringing the divided parts together; and if the wound appear languid, wanting that red appearance we have just described, and discharging thin matter, some of the stimulants we have mentioned may be employed: still it is improper to cram tents into the wound or daub them over with stinking ointments. If the red granulations form so luxuriantly as to rise above the level of the skin, they must be kept down by red precipitate, burnt alum, or other applications of this kind; pressure will also be effectual on this occasion, laying a piece of soft lint on the part, and confining it with a roller. Should the sides or edges of the wound become callous, caustics must be applied to remove the old surface, and then fresh attempts should be made to bring them into contact. When the matter has penetrated from having been confined, so as to form sinuses, fistulæ, or *pipes*, as they are commonly termed (that is, narrow, deep ulcers running in various directions), their sides, if possible, should be brought into con-

tact by means of pressure. If such sinuses have existed for some time, the sides will have become callous, and incapable of uniting; it is then necessary to apply caustic, either by injecting some liquid caustic, such as strong solution of blue vitriol, dilute nitrous acid, &c., with a syringe, or by dipping lint in the same, and passing with a probe to the bottom of every sinus. (See *Fistula*, *Poll Evil*, and *Quittor*.) This is the only occasion on which tents are proper. If it be impossible to bring the sides of the sinus into contact, it can only be cured by the formation of new flesh, to promote which it is necessary to inject daily some stimulating liquid, such as spirit of wine, tincture of benzoin, &c.; keeping the orifice open, lest it heal before the deeper part. Even these, however, will be found ineffectual, if the sides of the sinuses be callous; and then should be preceded by the caustic, as above described (see *Ulcers*, *Fistula*, *Poll Evil*, and *Quittor*), which sometimes requires to be repeated. I thought it necessary to be thus minute in describing the treatment of lacerated wounds, as it is a subject of great importance, and generally little understood. Under this head it is proper to treat also of gun-shot wound, in which the ball enters with such force, and the parts are so much bruised, that their vitality is destroyed; therefore

nothing can prevent their separation, or *sloughing* as it is termed. This generally takes place a few days after the accident, and until that period it would be highly improper to use any kind of pressure, or attempt to bring the sides of the wound into contact. The first thing to be done in these wounds is to extract the ball, should it have lodged; but we must not employ any violent means to effect this, as it is more easily done after the dead parts have separated and a healthy suppuration has taken place. Sometimes the ball penetrates so far as to be felt near the opposite side of the part, where an incision should then be made in order to extract it. Whenever matter ponds up, or is confined in any kind of wound, it is proper to make such an opening as will allow it to escape freely: setons are sometimes employed for this purpose. (See *Wounds of Cavities* and *Punctured Wounds.*) In gun-shot wounds it is improper to bleed, as hemorrhage often happens when the dead parts separate: in other respects they are to be treated as we have above described. Indeed, their treatment must depend greatly on the importance and situation of the wounded part, as the ball may penetrate a joint, or the cavity of the chest or belly. (See *Wounds of Cavities.*)

Punctured Wounds.

This kind of wound also often occurs in veterinary practice. The feet are particularly liable to it, and not unfrequently they are inflicted through the carelessness or impatience of the groom. During the time of my service in the army, I may truly assert, that more than fifty cases occurred, in which the wound was inflicted by the fork used about the litter, either by accident or by the savage violence of the groom. It is but just, however, to acknowledge, that a good soldier will sacrifice even his own repose to that of his horse, and thinks nothing a labour that can contribute to the health and comfort of his faithful companion; but, among so great a number of men, there are too often some of a different description. Punctured wounds of the feet are most frequent, and are caused, either by the horse stepping on a nail, or *picking up a nail* as it is termed, or by carelessness of the farrier in shoeing. In the former case the nail generally enters the frog, and often penetrates the joint of the coffin bone. (See *Anatomy of the Foot.*) The sole is generally sufficiently hard to resist the nail; but the frog is commonly of a softer and more spongy nature. When the coffin joint is wounded, there is danger

of an incurable lameness from the joint becoming stiff; but by proper management the wound is often closed in a short time, and the free motion of the bones preserved. (See *Wounds of Joints*, under the head *Wounds of Cavities*.) Whenever the foot is wounded by a nail, it is necessary immediately to open the orifice in the horny matter by means of a drawing knife: if the joint be wounded, synovia, or joint oil, will issue from the wound, but in very small quantity. An experienced person can easily ascertain this point still more certainly by tracing the wound with a probe. The treatment of this kind of wound will be described in the chapter on *Wounds of Cavities*; but when the joint has escaped the injury, after enlarging the opening made by the nail in the horny matter, and cutting away the horn from the contiguous parts, until it becomes very thin, a little tincture of benzoin is to be poured into the wound; the stimulus of which, so far from being injurious, as in lacerated wounds, will soon bring on a secretion of healthy matter; a little tow or lint, dipped in tar or Venice turpentine, is then to be applied, and the whole foot kept cool by means of a bran poultice. The most essential part of the treatment is opening well the orifice in the horny matter: for in wounds of this kind we always find, that, soon after the nail has been

withdrawn, the puncture in the horn nearly closes; but the living parts that have been wounded underneath the horn soon inflame and swell; consequently, they suffer considerable pressure, as the horn is too thick and inflexible to give room to them as they swell. At length matter forms, which, being confined by the horny covering, diffuses itself between the sensible and insensible parts, sometimes so extensively, as to render it necessary to remove great part, or even the whole of the latter. This operation, so often cruelly and unnecessarily performed by farriers, is termed *drawing the sole*. In the case described, where the parts are separated by the matter, the operation is performed with but little pain to the animal. But those officious practitioners too often tear it off when perfectly healthy, and with a view to remove a lameness, of the cause and seat of which they are totally ignorant. Often have I been desired by the owner of a lame horse to *draw the sole*, under an idea that it was an infallible remedy for an obstinate lameness, or for a desperate wound of the coffin joint*.

* This mischievous and cruel operation is held in such high estimation by farriers, that they exultingly display the soles of their unfortunate patients, nailed to their doors or window-shutters, as a sort of diploma, or undeniable sanction to practise the art of farriery. We have reason to hope,

When it has been found necessary to remove some part of the horny sole, in consequence of matter having formed under it, a pledget of tow dipped in digestive ointment, or a mixture of Venice turpentine and hog's lard, should be applied. Sometimes we find the coffin bone diseased, in which case the injured part generally separates, and then a new horny sole is gradually formed. When a horse's hoof is wounded by the farrier in shoeing, he is said to be pricked: the nail, instead of being driven into the horny insensible part only, is either forced into the living parts, or so near to them, as, by it's pressure, to give such pain to the animal as to cause him to go lame; inflammation gradually takes place in consequence, and at length matter forms, which, if not allowed to es-

that this abominable and cruel practice will not long exist, as the condition of this most useful animal has of late experienced a considerable melioration, and will, we trust, by the laudable encouragement now given by many distinguished, I may say illustrious personages to the veterinary science, be soon rescued from the hands of those barbarous and presuming practitioners. The ingenious gentleman I have before mentioned, so liberal in the use of carrots, was equally proud of his skill in tearing off the soles from horses' feet, and I am informed often boasts in ale houses, among grooms and other companions, of his skill in this operation, and more particularly of his profound knowledge of the "*Ottomy* (meaning *Anatomy*) *of the Horse*."

cape by removing the shoe and cutting away the horn with a small drawing knife, spreads under the hoof, and after some days breaks out at the *coronet*. (See *Anatomy of the Foot*.) In this case, the mischief is not always discovered immediately after shoeing. The pressure upon the sensible parts is sometimes too inconsiderable at first to occasion lameness; so that when the horse is observed to go lame, the farrier pronounces it to be in the shoulder, and the poor animal is tormented by the strong oils, or even blisters, applied to that part, while he is suffering from another cause. It is in this way that the disease is sometimes allowed to run such lengths as we have described. When the nail is so driven as to wound the sensible parts at once, the horse goes lame immediately after; and the cause being generally suspected, the shoe is taken off, the opening in the horny part enlarged with a drawing-knife, and a little tincture of benzoin applied. The lameness is thus soon removed, the shoe reapplied, taking care not to place a nail, or suffer the shoe to press on the injured part, and the horse becomes capable of returning to his work*.

When wounds of this kind have been so

* The remedy commonly employed by farriers in these wounds is *oil of turpentine* poured into the wound, and then *set on fire* with a candle: the more knowing ones, however,

neglected that matter breaks out from the *coronet* it is still necessary to enlarge the opening in the horn beneath; and if it have closed (which it generally does), the horn must be removed with a drawing-knife, that the matter may escape freely; the upper wound (in the coronet) will then soon heal, by applying the tincture of benzoin. *Punctured wounds* in other parts are often inflicted with the stable-fork, either accidentally or intentionally: I have often known joints wounded in this way. (For the treatment of joint wounds, see *Wounds of Cavities*.) When the flesh only is punctured, the orifice must be kept open, that the wound may heal from the bottom; and if the sides become callous and indisposed to heal, a mild caustic may be injected, such as solution of blue vitriol. In punctured wounds of the fleshy parts, it is of consequence to procure a free exit for the matter: with this view we often make counter openings with a knife, or pass a seton through the wound. In recent wounds, however, of the punctured kind, those irritating applications are improper: wounds of this kind are frequently followed by considerable pain and inflammation. It is therefore necessary to keep the

prefer *oil of vitriol*, perhaps as being more simple, rendering the application of the candle unnecessary.

orifice open; and if it be small, to enlarge it with a lancet, when the pain and inflammation have subsided. Should the wound appear indisposed to heal, and be found, upon examining with the probe, to be as deep as at first, there is reason to suppose that it's sides have become callous: a caustic is then to be applied throughout it's whole course; and, after a day or two, or when white matter is observed to flow from the wound, such pressure should be applied, where it is practicable, as will bring the sides of the wound into contact, and continued until they are united. When punctured wounds are so situate, that the matter can freely escape, there is much less difficulty in curing them, than when they are in a situation of a different kind; or where the orifice, instead of being the lowest, is the highest part of the wound. This inconvenience, however, is sometimes obviated, by making a new opening with a knife or lancet, or by passing a seton through the wound: but in some situations this cannot be done: nor can we, in many cases, apply sufficient pressure to bring the sides together. The wound can then be healed only by the formation of new parts, by which the cavity is filled up; to effect which we inject stimulating liquids, such as proof spirit, tincture of benzoin, or solution of blue vitriol, and take care to keep the

orifice open, that the bottom of the wound may be first healed.

The most formidable punctured wounds generally happen while a horse is employed in hunting, in leaping over gates or hedges: he is then said to be *staked*. The deeper and more lacerated these wounds are, the more carefully should we avoid the irritating applications and tents of the farriers, adopting in their stead the same treatment we have directed for extensive lacerated wounds.

There is another kind of punctured wounds, which is likely to occur in military service; and in a charge of cavalry upon a line of infantry, it is astonishing that so many should escape the *bayonet* as we generally find do on such occasions. Those are generally of considerable depth, and often followed by profuse bleeding. When the bayonet penetrates the belly or chest, the wound is commonly fatal, particularly if any of the large blood vessels within these cavities be wounded. When merely the fleshy parts are wounded, there will be little danger, particularly if there be no considerable blood vessel opened. The treatment of these wounds is nearly the same as we have already described, except that it is more frequently necessary to enlarge the orifice or mouth of the wound; and that there is often

occasion to perform a rather difficult operation; namely, that of tying the artery in order to stop the bleeding; for when a large artery is wounded, the blood flows so copiously as to require the most expeditious means of suppression. It is difficult for a person unacquainted with anatomy to perform this operation of tying the artery. Therefore, if no professional person be present at such an accident, it is advisable to endeavour to stop the bleeding by pressure, giving up all attempts to tie the artery, and not placing any dependance upon those preparations called *styptics*. (See *Materia Medica*.)

Pieces of sponge or lint, secured with bandage, will be found most convenient for this purpose. If the wounded artery be of considerable size, which may be known by the quantity of blood and the force with which it is thrown out, the bandage should not be removed till the second or third day *.

In these wounds, also, it is necessary to avoid the stimulating applications and tents commonly employed by farriers: but when the inflammation

* It is easy to distinguish between a wounded artery and a vein. In the latter, the blood is of a darker red colour, flows in a uniform stream, and with little force: in the former, the blood is of a bright scarlet colour, and is thrown out by jerks, with considerable force.

has subsided, and the wound does not appear disposed to heal, they may be used with advantage. It is of importance to procure a free exit for the matter, for which purpose a counter opening may be made, when the situation of the wound will admit of it.

All punctured wounds are liable to become fistulous: that is, when the sides cannot be brought into contact by any means, they often become *callous*. It may be necessary to repeat, that in such cases caustics must be applied to destroy the callosity, and then gentle stimulants are to be injected to promote the formation of new flesh. There is more difficulty in healing wounds of tendons or ligaments, than flesh wounds; and in such cases, after the first inflammation has subsided, the stronger stimulants, and even caustics, are often required. (See the author's *Veterinary Materia Medica, or 2nd Vol.*)

Wounds of circumscribed Cavities.

(Under this head we shall describe wounds of the *Chest, Belly, Joints, Sheaths of Tendons,* and *Blood Vessels.*)

When the chest or belly is punctured, there is

generally danger of a fatal termination: the danger, however, is proportionate to the extent of the injury, and is always greater when any of the parts contained in the chest or belly are injured. This kind of wound is most liable to happen in military service, and is most commonly inflicted with the bayonet and ball. Even in small wounds of these important cavities, there is danger of inflammation taking place in the bowels: it is necessary, therefore, to close the wound as neatly and expeditiously as possible, by sewing it up; taking care, however, that the needle do not pass through the fleshy parts, but merely through the skin. It is proper, also, to bleed, according to the strength and condition of the animal, and to give a purgative draught. If swelling and inflammation come on, foment frequently with a decoction of the bitter herbs. (See *Fomentations.*) If the wound do not unite by the first intention, white matter will soon make it's appearance. A little tincture of benzoin may then be applied. In extensive wounds of the abdomen, or belly, the bowels often come out through the opening, in which case there is considerable danger, though the bowels may have escaped the injury. Should they have been wounded, let the wound be very neatly stitched up with a small needle and waxed silk, and then gently replaced within the belly,

taking care to remove any dirt or other matter that may adhere to them. The wound is then to be carefully closed, as we have before directed, and supported, if possible, with bandage: the end of the silk, however, with which the bowel is sewed, should be kept out of the external wound. Bleeding and a clyster are particularly necessary: bran mashes, with strong gruel, or a little sweet oatmeal stirred into each mass, is the most proper diet. If the bowels have been wounded, it is absolutely requisite to keep the horse from eating hay or straw, or any hard food; for, as the digestive process is far from being perfected in the horse's stomach, the hay or straw might arrive at the wounded part in a state capable of doing great injury. In wounds of the chest, nearly the same treatment is required: a purgative, however, may be given in such cases, before inflammation has taken place; but, whenever this happens, whether it be in consequence of these wounds or of wounds of the belly, it must be treated according to the directions given under the heads, *Inflammation of the Lungs* and *Bowels*.

The *cavities* next in importance to the chest and belly, are those named *joints*; which in horses are more frequently wounded than the other cavities. These wounds, although from mismanagement they sometimes prove fatal, yet are of

more importance from the circumstance, that without the greatest care and the most judicious treatment they almost invariably render the horse permanently lame; and sometimes in so considerable a degree, that he becomes nearly, if not entirely useless. Previous, however, to entering on the consideration of their treatment, it is desirable to give such an account of the structure of a joint, as may render the directions more intelligible. A joint is formed, generally speaking, by the ends or heads of two or more bones: these ends are covered by a layer of gristle, or cartilage, which is of a yielding and elastic nature: this cartilage has on it's surface a firm but thin membrane, which is constantly forming a slippery fluid, termed *synovia*, or joint oil; it posseses also *absorbent vessels*, to prevent an undue accumulation of this fluid*. The ends of the bones, thus covered with a smooth yielding surface, so slippery as to move upon each other freely without suffering from friction, are then firmly tied together by a strong inelastic sub-

* When a joint becomes dropsical, as in *bog spavin*, it is either from a loss of power in the *absorbent vessels*, or an increased action of the vessels which form the joint oil: perhaps both these causes may concur in producing the disease, the more remote cause of which is generally hard work, that is, too great or too long continued motion of the joint. The disease termed *wind galls* may be explained in the same way. (See *Wind galls*, Appendix.)

stance, termed *ligament*, which completely surrounds the heads of the bones, as far, at least, as they are covered with the smooth cartilage. This ligament, termed by anatomists *capsular ligament*, is not so tight as to prevent extensive motion of the bones, but sufficiently so to hold them firmly in their proper situation. The joint is thus completely shut up, forming a kind of sac, or what is termed a circumscribed cavity, and the joint oil which is formed is confined to it's proper situation. When a joint is wounded, or, in other words, when the *capsular ligament* is wounded, the joint oil, which is a transparent fluid, of a light yellowish or brownish colour is seen almost constantly oozing from the wound, particularly when the animal moves the joint. If proper means be not employed to close the wound, inflammation takes place within the joint, occasioning the most excruciating pain, and at first an increased formation of *synovia*. If the wound continue open, the inflammation and pain become more considerable, and a symptomatic fever takes place, which sometimes proves fatal. It often happens, however, in this stage of the complaint, that the vessels of the capsular ligament, instead of forming joint oil, pour out a large quantity of glutinous coagulating fluid, which, filling the cavity of the joint and becoming solid, totally and permanently

obliterates it. The inflammation, pain, and fever, then gradually subside, and the wound heals; but the joint can no longer be moved, and an incurable lameness is the consequence. From this description will appear the importance of attending to these wounds as early as possible, and of closing the wound as expeditiously as we can. This, however, cannot be effected by the means we have recommended for other wounds. Ligaments are of a different nature from flesh or skin, and, when wounded, cannot be healed without the assistance of strong stimulants, and even caustics*: but these must be used with great caution, for when they are so clumsily employed as to enter the cavity of the joint, the most violent inflammation will ensue. Some of the old farriers appear to have known the utility of

* It has been supposed, that the violent pain and inflammation, which follow the wound of a joint, are caused chiefly by the admission of air into the cavity, and a deficiency of synovia, or joint oil, by which the two surfaces are exposed to friction. It is certain, however, that in these wounds there is much more synovia formed than usual; which may be known by the quantity that flows from the wound. This increased formation of synovia, however, continues only a certain time; after a time, the coagulating lymph is poured out, which, becoming solid, obliterates the cavity; but in large wounds of the principal joints, the animal is often destroyed before this happens, by the symptomatic fever which comes on.

caustics in these wounds; but, mistaking the principle on which they acted, often injected liquid caustics into the joint and thereby brought on the most excruciating torments. Sometimes their patients were destroyed by the fever which followed; more frequently, however, the joint became stiff or immoveable, as we have before described, and the wound healed. Other farriers, preferring to employ the *solid* caustics, and failing in their attempts to thrust them into the cavity of the joint, have applied them no farther than the orifice in the capsular ligament, and have, by this fortunate failure, effected a cure without the loss of the joint. This plan, however, can only be adopted in wounds of a small size, or of the punctured kind, such as those inflicted with the stable fork; and, fortunately, wounds of joints are most commonly of this kind. But we sometimes meet with cases where the wound is of considerable size, and much lacerated: there is scarcely a possibility then of preserving the joint; and if it happen to the larger joints, such as the hock and stifle, there is great danger of it's destroying the animal. In such cases, caustics are improper; they must be treated as deep lacerated wounds. But in the small punctured wound of a joint, the *actual cautery* (hot iron), cautiously applied, has been found the most expeditious and

effectual remedy. I have succeeded also with the *lunar caustic* (nitrate of silver). Farriers sometimes employ the *butter of antimony* (muriate of antimony), and *white vitriol* (vitriolated zinc*): they often inject some liquid caustic into the wound with a syringe, such as solution of blue vitriol. The earlier the actual cautery is applied, the more speedily will it heal the wound; and it is particularly desirable to have it applied before inflammation takes place in the joint. The iron should have a round point, and be applied when at a dull red heat; the wound should be so seared as to stop the discharge of joint oil. It often happens, that, after a short time, an oozing of synovia is again observed: in such cases the iron must be again applied, and

* I have heard a farrier boast of possesing a receipt for a *joint humour*; or, as he termed it, for "*killing a joint humour.*" In small wounds of the inferior joints, this man sometimes succeeded. Upon examining the remedy, I found it to consist chiefly of white vitriol, which indeed was the only active ingredient. This, coarsely powdered, was put into the wound; but as the man supposed it's efficacy depended upon it's entering the cavity of the joint, and subduing this formidable *humour*, he of course took great pains to thrust it in with his probe. In large wounds he generally succeeded in his attempt, and destroyed either the joint or the animal: but in small wounds of the lower joints, he merely brought it into contact with the wounded ligament, and thereby often effected a cure.

repeated, if necessary, several times. I have sometimes succeeded ultimately, though the iron had been applied ineffectually twice or three times. When inflammation takes place in the joint, the most powerful remedies should be expeditiously employed for it's removal, such as bleeding and purging. Fomentations and poultices in such cases are not so useful as blisters, which should be applied rather extensively about the joint; but as long as the wound in the joint remains open, the inflammation will continue; therefore our principal object should be to close the wound. There is no external complaint which occasions such excruciating pain to the animal as inflammation of a joint, particularly when it has proceeded so far as to ulcerate the bones; several cases of which have come under my observation.

Wounds of the Sheaths, or Membranes surrounding Tendons.

These require nearly a similar treatment to that we have just described, and, when of the small punctured kind, are more expeditiously healed by a judicious use of the actual cautery, than by any other remedy. These wounds also generally discharge something like synovia, or

joint oil, and, if suffered to remain open, are productive of very violent pain and inflammation. When they are so large as to render the caustic an improper application, they should be closed as neatly as possible, and kept so by adhesive plaster and bandage. This plan is equally applicable to similar wounds in joints; and, if adopted in time, will often be found very effectual: even when the actual cautery has been applied, and the wound seared so as to be closed, the adhesive plaster will be found a useful assistant, and will often prevent the necessity of repeating the cautery. I have known a wound in the knee joint soon heal by means of the sticking plaster alone. The tendons most liable to be wounded are the *back sinews:* they are enclosed in a strong tendinous sheath, which, like a joint, contains a small quantity of slippery fluid, to render their motions easy, and prevent the cohesion of the parts. About the fetlock joint, or rather above that joint, there are small sacs, or little bladders, connected with the tendon and ligaments, which also contain this slippery fluid, and serve to facilitate motion in these parts. When a horse is worked too hard, these bladders contain an unusual quantity of the fluid, or synovia, and appear swelled or puffed, constituting the disease termed *wind-galls.* If these little

bladders receive a wound, it is generally followed by violent pain and inflammation; and when improperly treated, a very obstinate lameness may be the consequence. In this case, nothing is more useful than the sticking plaster, provided the lips of the wound be neatly brought together before it is applied: but if the wound be of the small punctured kind, the actual cautery should be first applied. Great care, however, is required in this case; for if the iron be not applied very lightly, and it's pointed end properly adapted to the size of the wound, it may do much mischief. Blisters are the best remedies for any swelling that may remain after a wound in the sheaths of tendons, or in joints: and if one blister be found insufficient, a repetition of the remedy will generally succeed. The last kind of wound we have to describe is one that happens more frequently than any other, and is more easily cured; that is a *wound of a vein*. When a vein is properly opened, and afterwards carefully closed in the usual way with a pin and a little tow, it almost always heals by the first intention: but when it is opened by a rusty blunt *fleam* or lancet, and particularly when the instrument is driven with such violence as to cut not only into but through the vein, making thus an orifice both before and behind, it seldom heals so readily:

on the contrary, inflammation takes place within the cavity of the vein, which gradually extends or spreads until either the wound is closed, or the vein obliterated, by the coagulating matter which forms within it. If the inflammation extend to the heart, the animal is instantly destroyed; more commonly, however, the vein is soon plugged up, and ceases to convey blood. But even in this case the disease proves very troublesome; in consequence of the *jugular* or neck veins being the principal channels, by which the blood of the head returns to the heart. This obstruction to the return of the blood causes a swelling of the large gland under the ear, to which the formation of matter is often a consequence. Sometimes the eye becomes inflamed; and I have seen symptoms of *apoplexy* or *staggers* produced by this cause. If a horse be turned to grass in this situation, the inconvenience is considerably increased; the position of the head in grazing being unfavourable to the return of blood from the head. The inconvenience arising from a loss of the jugular vein is not, however, permanent; the smaller veins gradually enlarge, and, after a time, return the blood as readily as the jugular or neck vein did originally. When this accident happens, the mischief may be perceived about the second day

after bleeding; sometimes the day following that of the operation. When the orifice in the vein is large, and particularly if the wound in the skin be but slightly closed, or if the horse happen to rub the pin out, the wound bleeds freely; and though it be again pinned up, the blood often bursts out after a short time. I have seen a case where the horse had been bleeding, at intervals, three or four days, though the wound had been several times firmly pinned up: this was very soon stopped by the actual cautery, but the vein was obliterated at that part and a little way downward and upward; and the swelling of the gland under the ear took place. When the orifice in the vein is but small, or when the vein is not transpierced, but inflames only from the orifice in the skin having been imperfectly closed, or from hair or blood lodging between the lips of the wound, the first symptoms are swelling and an oozing of moisture from the wound. In this case the vein is often preserved, and the disease soon cured, by applying lightly the actual cautery, and by keeping the horse at rest.—It must not be supposed, however, that in every case of swelling after bleeding the vein is inflamed: a slight swelling often takes place immediately after the operation, merely from the blood getting into the cellular membrane under the skin: and

this swelling is sometimes succeeded by an oozing of moisture from the wound: but all this is soon removed by rubbing on it a little soap liniment. When the vein is really inflamed, there is generally a discharge of blood some time after the operation: and if this do not happen, the swelling extends to the gland under the ear, the whole being extremely tender and painful, often rendering the horse almost incapable of masticating or swallowing. When the disease is improperly treated, or suffered to take it's own course, sinuses form by the side of the vein; so that the probe may be passed in various directions, generally upward towards the gland, sometimes inward among the muscles of the neck.

The actual cautery is undoubtedly the most effectual application at first: but when the disease has been suffered to proceed so far as we have now described, it is necessary to keep the orifice open, that the matter may escape freely; and, by injecting a solution of blue or white vitriol, cause it gradually to heal from the bottom.

When the gland under the ear is much swollen, and very painful, a poultice should be applied; but when the swelling feels hard, and without tenderness, a blister is more effectual.

In taking leave of this subject, which may

appear to some of my readers to be spun out to an unnecessary length, I must beg leave to observe, that wounds in general, more particularly those of circumscribed cavities, require so much care and consideration, in order to be treated with success, as to convince me of the propriety of giving a detailed description of them.

Diseases of the Eye.

Among the various diseases to which domestication and improper management have subjected the horse, those of the eye are more frequent, and often more obstinate, than any other; and what makes this subject peculiarly interesting and important is, that unless a horse's eye be absolutely perfect, he is liable to start and stumble; and it is allowed, that a horse, whose visual organs are imperfect, is often more unsafe to ride than one totally blind. Another consideration induces us to make some additions to this subject, which is, that these diseases, when allowed to exist any time, or when improperly treated, are scarcely ever cured; and, though apparently removed for a time, ultimately terminate in blindness; whereas, by seasonably applying proper remedies, the eyes have been perfectly and per-

manently restored. When the disease first appears, our treatment must in some measure be guided by the state of the horse's condition, strength, and age. Such as are young and in high order require at first both bleeding and purging: but old horses, particularly when low in condition, cannot bear the loss of much blood, or the operation of a strong purgative; still local bleeding is proper, and a dose of laxative medicine. The local bleeding consists in opening the vein, which appears to proceed from the inner corner of the eye, or in scarifying the inner surface of the eyelid. This operation is proper in all circumstances.

Horses of the former description often require a repetition both of the bleeding and purging, with a cooling diet and frequent exercise. The most essential local remedy is *blistering* the cheek and temple, so as to create a considerable discharge; and if the first application be not sufficiently powerful, let the part be washed with soap and water, and a fresh blister laid on. I have found this far more effectual than setons or rowels, and have now greater dependence on it than on any other topical remedy*. When the

* In blistering the cheek, it is necessary to prevent the horse from rubbing it off about the manger or other parts,

inner surface of the eyelid appears unusually red, it is more particularly proper to scarify it with a lancet, during the first stage of the complaint, while the eye is extremely irritable, and the inflammation considerable.

The following lotion may be frequently applied with a soft sponge; but no force should be employed to get it under the eyelids:—

EYE WATER.

N° 1.

Tincture of opium	2 dr.
Water of acetated litharge . .	1 dr.
Pure water	8 oz.

Mix.

N° 2.

Ext. of hyoscianus, or henbane	1 dr.
Pure water	8 oz.

Rub them together in a mortar, pouring on the water gradually; and, when perfectly mixed, add, of the

Water of acetated litharge . .	1 dr.

as he then generally gets some of it into his eye, whereby the inflammation is considerably increased, and the eyelids are often so swollen from this cause, that total blindness is produced for several days. The lotion is on this account often preferred

When the inflammation abates, and the horse begins to open the eye more perfectly, we often observe a cloudiness on the surface, sometimes so considerable as to intercept the light, and prevent vision. This, however, may soon be removed, by putting into the eye some stimulating powder, or by washing the eye with a solution of white vitriol, two or three drams to eight ounces of water. When by these means the disease has been removed, we should carefully guard against it's recurrence, by exercising the horse regularly, and avoiding such things as may suddenly suppress or check perspiration. Moderate feeding, too, and good grooming are necessary. By continuing this kind of management, the eye will gradually recover's it's strength; but if these precautions be neglected, the disease generally returns; for though the eye appears to be quite recovered, it cannot be supposed, that so delicate an organ can be suddenly restored to it's original strength, after such an attack. As horses are too frequently treated improperly, it is not to be wondered at, that this disease should so often return after having been apparently cured; nor ought we to attribute it to any peculiarity in the constitution of the horse, or in the structure of his eye. The disease we have now been describing is that which arises from some internal cause,

either a general fulness of the system, or partial determination of blood to the eye, in consequence of suppressed or diminished perspiration. When the eye becomes inflamed from a blow, a bite, or any external injury, it is generally soon cured merely by washing the eye with the above lotion; but when the injury is considerable, bleeding and purging, and particularly local bleeding, are also necessary.

When the eye itself is wounded, so that the *humours*, as they are termed, run out from the wound, blindness must be the consequence. But if the surface of the transparent part, or glass of the eye, be slightly scratched only, and the whole surface or part of it become opaque, or have a *film*, as it is commonly termed, in consequence, such opacity is often removed by throwing under the eyelid some stimulating powder, such as salt. If this fail, a little finely levigated glass, mixed with honey, may be put under the eyelid, by which it will soon be diffused over the surface of the eye. In these cases, however, such applications are not to be used, until the violent inflammation, which the accident occasions, has abated. Among the various diseases of the eye described by writers on farriery, there is one which they term *moon blindness*, from it's supposed periodical recurrence. This complaint

is considered incurable, perhaps justly; but I have little doubt that it might be prevented. When the eye becomes inflamed from an internal cause, and the inflammation is allowed to exist for any time, a weakness of the part is the consequence; and though the inflammation be removed, the weakness will continue. But if the causes which first produced the complaint be avoided, or, in other words, if the horse be properly exercised, fed, and groomed, the part will gradually recover it's original strength: if, on the contrary, as soon as the inflammation is gone off, the exciting cause be again applied, the eye will more readily become diseased than it did at first; being in a weak state, and consequently more irritable, or susceptible of inflammation. The second attack will of course increase the weakness, or disposition to disease; and after this, the case may be justly deemed incurable. After repeated attacks the interior parts of the eye become diseased, and at length a *cataract*, or incurable blindness, takes place. It often happens, however, that the eye continues in this fluctuating state some time. In some cases a *cataract* forms rather suddenly.

I have often met with cases, where a small speck, or opacity, formed in the *crystalline humour*, and continued without alteration for twelve

months. In one case, no alteration happened in two years; but this speck, or opacity, in the inner *humour*, or *crystalline*, always hinders vision in some degree, and is frequently the cause of a horse's starting.

Locked Jaw.

I HAVE lately met with a case of locked jaw, that appeared to have been caused by a wound in the foot, which was completely cured by the following treatment:—Upon examining the horse, I found the wound in the foot nearly healed; the jaws so closed, that he could not even take food into his mouth, though he was constantly endeavouring to do it, and appeared very hungry, having been incapable of eating any thing about twenty-four hours before I saw him; the muscles of the neck were in a natural state, though the jaws were so closed as to prevent his taking food into his mouth; the teeth were not absolutely in contact; and we were able, but with great difficulty, to introduce gradually a large dose of opium and camphor. When we first attempted to give this draught, the animal appeared so agitated, and resisted so much, that it required the assistance of several men to give it. As soon as the medicine

was given, a strong blister was applied to the spine, or middle of the back, beginning at the withers, and continuing it the whole length of the spine, even to the basis of the tail; the blister was carefully rubbed in, and afterward a fresh quantity was spread upon it, in order to expedite it's action. A caustic was then applied to the wound in the foot. In about six hours we endeavoured to give some strong gruel, and found much less difficulty in doing it, than in giving the medicine at first. The jaws, however, were still nearly close, and some dexterity was required to pour the gruel into the throat. Soon after this, another dose of opium and camphor was given, and water-gruel several times. During this time, the jaws appeared to be rather more open, and there was less difficulty in giving the gruel. About twenty-four hours after the application of the blister, during which time he had taken two strong doses of opium and camphor, and some gruel, the horse was able to feed, and even to eat hay. Another dose, but weaker, of opium and camphor was given: the complaint did not return. The fatality of this disease in horses, and the consideration that a clearly stated case can be more closely followed than a general description of the treatment, have induced me to give a detailed account of this successful case.

Fever.

In the former editions of this work, fever was considered either as a *simple* or original complaint, arising from suddenly suppressed or checked perspiration, or as a *symptomatic* or complicated disease, depending upon an affection of one or more of the internal organs, or their membranes. In both cases, *bleeding* was recommended as an essential remedy. My practice, since that time, has not given me reason to change this opinion materially; but, as some modern writers on farriery have described another kind of fever, termed putrid, or *typhus*, in which bleeding is extremely injurious, I think it necessary to state the observations, which an extensive practice has suggested to me on this subject. The grand characteristic of fever I conceive to be, an unusually quick pulse, *i. e.* from seventy to a hundred in a minute; a peculiar kind of sensation which it gives to the finger, as if it were struck sharply by the vibration of a cord; and at the same time a feebleness, or smallness, quite different from that gradual swell of the healthy pulse. When a horse labours under considerable debility, either from hard work, want of sufficient food, or other causes, except fever, the pulse is more or less languid,

or weak; sometimes slower, at others a little quicker than usual; still, however, it swells gradually, and does not give that sensation we have described, and which physicians term *hardness.*

In *fever,* there is either a total loss, or a diminution of appetite, and the animal appears to be in pain; the natural evacuations (dung and urine) are generally deficient; and, upon lifting the eyelid, we generally find it unusually red. The mouth feels hotter, and the tongue is commonly dryer than usual.

In simple debility, or weakness, whether it be occasioned by hard work, or any other cause, except *fever,* the mouth and tongue are in their natural state; the pulse, though weak, and sometimes not easily felt, if we press much upon the artery with the finger, does not give that sharp hard stroke which characterises *fever;* the horse readily sweats; and when the weakness is considerable, the ears and hind legs will feel rather cold, and his flanks generally move quicker than usual. If blood be drawn, it will be found very different from that of a horse labouring under fever or inflammation. (See *Bleeding.*) The appetite, though diminished, is not quite gone; the inner surface of the eyelid seldom unusually red, often less so than in health; and the horse does not appear to be in pain. Though bleeding,

in such cases, is extremely injurious, a mild laxative is useful, unless the dung be softer and in greater quantity than natural; and if there be a deficiency of urine, or any difficulty in voiding it, a diuretic, composed of camphor and nitre, should be given. This symptom, however, seldom occurs in these cases. After the laxative, tonics, with a nutritious diet, and good groothing or nursing, generally restore the animal in a short time to health. This disease is sometimes mistaken for fever, and treated improperly: they are cases of this kind, however, that farriers so frequently cure, under the name of fever, by medicines of the cordial or tonic kind.

I never saw any kind of *fever*, in which bleeding, and, generally, laxatives, were not manifestly useful, if employed judiciously, at an early period; that is, if the quantity of blood drawn, and the strength of the laxative, were properly adapted to the strength of the animal, and the violence of the disease, and employed at it's first appearance. Several cases have occurred, where debility quickly succeeded the inflammatory commencement, and rendered bleeding, sometimes purging also, highly improper; and it is, perhaps, such cases, that some writers have mistaken for the *typhus*, or low putrid fever: others appear to me to have copied

their description of it from that given by writers on human diseases.

In cases of simple debility, I have found the following medicines of great use, giving the laxative in the first place, if the horse be costive, or even if the bowels be in a natural state; during it's operation, however, it is advisable to give strong gruel, instead of bran mashes.

LAXATIVE.

Barbadoes aloes	3 dr.
Powdered canella	1½ dr.
Prepared kali	1 dr.
Mint water	8 oz.

Mix for one draught.

TONIC.

Yellow Peruvian bark. . . .	6 dr.
Cascarilla	1 dr.
Powdered opium	½ dr.
Prepared kali	1 sc.

Syrup enough to form a ball for one dose.—It is often necessary to increase the proportion of bark, and sometimes of the other ingredients; but when the horse becomes costive, the opium must be omitted.

The most proper food, on these occasions, is good sweet oats, and the best hay, given frequently in small quantities. The horse should be allowed to drink, also, frequently; his exercise should be very moderate; and, when the weakness is considerable, he should be allowed to exercise himself in a large stall or box, and not taken out until he gets stronger. If he become costive, a clyster, or even a mild laxative, may be given. I have met with a disease, in *colts* of about two or three years old, in which the debility was extremely obstinate. The disease began with swelling about the chest and belly, great weakness, diminished appetite, and a rather *quick* pulse, without that *hardness* characteristic of fever. In the most remarkable case of this kind, the colt (three years old) was attacked in the month of May, while running in a fine piece of grass: the first appearance of illness was his separating himself from his companions, standing with a dejected appearance, and not grazing as usual. When examined, considerable swelling was observed about the chest, between the fore legs; and when I saw him, the pulse was about sixty in a minute, yet soft; he did not refuse his food entirely, but appeared indifferent about it; nor was there any symptom which indicated an affection of the internal organs. He voided his urine without diffi

culty, and in the usual quantity; but as the dung appeared harder, and in less quantity than is usual with horses at grass, a weak laxative was first administered. He was taken up and put loose into a cool stable, which opened into a large court, the door being left open: he was offered frequently young lucerne, clover, &c., and allowed to drink when he chose it. The swelling and weakness increased considerably; a medicine, composed of bark, vitriolated iron (salt of steel), and a little canella, was therefore given, and a more nutritious diet allowed; *viz.* gruel, arrow root powder, boiled in the usual way with water, and a handful of oats now and then. The tonic medicine so improved his appetite, that he readily took a moderate quantity of this food; yet the weakness continued, the swelling increased, and the pulse remained in a slow feeble state, but rather slower. The swelling was scarified, and a large quantity of water evacuated, by which it was greatly diminished; the dose of tonic medicine was increased, and joined with diuretics occasionally. His appetite improving, he was allowed to take an unlimited quantity of the most nutritious food, which was varied so as to keep up his appetite; and, by persevering in this plan about a fortnight, he appeared to be quite recovered. About a fortnight after this, the disease re-

turned with greater violence, the swelling extended all over the under part of the chest and belly, the pulse became very weak, but not much quicker than before, and the animal was extremely feeble. By persevering in the use of the tonic medicines, and assisting them by the most nutritious diet, such as strong gruel, new milk, oats, &c., the colt perfectly recovered. I have seen several cases of this kind, one of which proved fatal from the negligence of the owner, who did not supply the colt with a sufficient quantity of nutriment, which seems to be as necessary as medicine; and when a colt in this complaint refuses his food, I have found it necessary to drench him frequently with strong gruel, boiled arrow root, sago, or milk. It is proper also to vary the food, so that the animal may be tempted to eat oftener than he would otherwise: for this purpose carrots, lucerne, &c., are useful. The oats should be perfectly sweet; and should the colt be found to prefer them in a moist state, they may be sprinkled with water.

Epidemic Fever—or Distemper.

THE epidemic diseases of horses generally appear in the form of a violent *catarrh*, or cold. The first symptoms are cough, heaviness of the

head, the eyes often watery, or a little inflamed: sometimes there is a quickness of breathing; and the inflammation of the membrane, which lines the throat, nose, and windpipe, is often so considerable, as to cause a difficulty in swallowing; the pulse is generally quicker than usual. If the proper remedies be not employed at this period, the horse becomes very weak, and considerable fever takes place; the appetite goes off; the cough and quickness of breathing increase; and debility is so great, that the animal staggers in his walk. There is an offensive discharge from his nose; and, after lingering some time, the horse dies from a consumption. More commonly, however, a discharge of white matter takes place from the nose after the disease has continued a few days, by which the cough and other symptoms appear to be lessened; but though the horse slowly recovers his health and strength, a troublesome and sometimes incurable cough remains. When the disease is properly treated at it's commencement, the horse perfectly recovers in a short time, unless the attack is very violent; and even then, by judicious management, the *cough*, as well as the other symptoms, may be cured.

When an epidemic happens, horses should be carefully watched; and on the first appearance of any symptoms of the disease the horse should be

bled moderately, unless he is in low condition, or previously exhausted by hard work, old age, or unwholesome food. After bleeding give the following laxative, and let the horse's diet consist of bran mashes, sweet hay, and a very small quantity of oats. When the attack is moderate, these remedies are generally sufficient to effect a cure, taking care to prevent a relapse by nursing, and giving every day a dose of some antimonial preparation, of which that which resembles Dr. James's fever powder is the best.

But when the inflammatory symptoms are at first violent, when there is a quickness of breathing, soreness of the throat, and distressing cough, a blister to the throat is necessary; and, unless weakness forbids, bleeding even to three quarts is proper. A laxative is always beneficial at first, if the bowels be not already too open; after which, the antimonial with nitre is to be given daily. Warm clothing, and frequent hand-rubbing to the legs, are useful; but a close stable is injurious. The horse should be turned loose into a large stall; and if a discharge from the nose appear, let it be encouraged by causing the vapour of warm water to pass through the nostrils, and clothing the head and ears. When the disease, from being neglected or improperly treated at first, becomes alarming, and the weakness considerable, nothing

but tonic medicines and a nutritious diet can do any good.

LAXATIVE.

Barbadoes aloes	2 dr.
Tartarised antimony . .	1 dr.

Mix first with about 4 oz. of warm water; and then add 4 oz. of castor oil.
To be given at one dose.

Diseases of the Stomach.

THE principal diseases of this important organ have been before described. There is one, however, which I have but briefly noticed, and which has been denominated *stomach staggers*, from it's resemblance to *apoplexy*, or brain staggers.

A description of the symptoms has been given already. (See *Staggers*, p. 92—95.) It has been proved, that this disease arises from a distention of the stomach by food. The stomach, with it's contents, of one horse that died of this complaint, weighed nearly sixty lbs. It's coats were so stretched, that they were easily torn, and had, no doubt, lost all power of contracting some time before death. The food which it contained was rather hard, consisting of imperfectly masticated hay and oats. The yellowness observable in

the horse's eyes and mouth appeared to have been occasioned by the pressure of the stomach upon the gall duct, causing the bile to return into the circulation. A considerable number of horses, that died of this disease, were examined, and the same appearance observed in all of them: we therefore concluded the immediate cause of this kind of staggers was an accumulation of indigestible food in the stomach: but as the disease also happened to horses at grass, and, in two or three cases, even to such as had been at grass some time without being changed into other grass, it became necessary to enquire into the *cause* of this accumulation. In many cases, where it attacked horses kept in stables, it was ascertained without difficulty. The horses most liable to it were such as had been much exhausted by hard work, unwholesome food, or old age; and not unfrequently all three of these causes had concurred in exhausting the animal's strength. Most commonly, the immediate cause was found to be that which we have before alluded to in page 256; that is, allowing a horse that has been kept a considerable time without food, and just come into the stable from a long and fatiguing journey, to eat an unlimited quantity of food, without giving a sufficient quantity of water to enable the stomach to digest it. This, however, could not have been the cause

in the horses attacked at grass; yet, upon inquiry, it was found that such horses had been used ill or worked hard, previous to their going to grass, and were generally old horses. It is probable, therefore, that the disease was brought on by the horse's eating voraciously of some unwholesome grass, which might act as poison on the stomach, depriving it of the digestive power, the effect being more readily produced in weak stomachs or debilitated constitutions. Whenever the stomach staggers happen, the proprietor is greatly alarmed, from an opinion which generally prevails of their being contagious. There are some circumstances which seem to countenance this opinion; 1st, that they often attack more than one horse when several are kept in the same stable, not at the same time, but in succession; many farmers having lost several horses in a short time from this disease. I am satisfied, however, that they are not infectious; and when a farmer happens to have several horses attacked with *staggers*, either at the same time or in succession, it can only be attributed to his negligence or hard treatment of the animal: considerable experience and careful investigation have convinced me of the truth of this remark. The only method of removing this disease is to exhibit strong purgatives, joined with aromatics and other stimulants, at an early period;

for, if the stomach be distended to a certain degree, no medicine can restore it*.

I do not think it advisable, in this disease, to give a large quantity of purgative medicine at once, but some powerful stimulus must be exhibited, in order to give the stomach sufficient energy to expel it's contents. The purgative, with weaker stimulants, may be repeated once in ten or twelve hours; and about a pint of salt water every second hour, with a teaspoonful of compound spirit of ammonia. This will serve to moisten the contents of the stomach, and stimulate moderately at the same time. Clysters are also to be given now and then, so as to remove any hard excrement, that may get into the last gut. The extension of the stomach causes an accumu-

* When the stomach has it's vital power considerably diminished, it's contents become subject in some degree to chemical laws, by which all dead matter is governed, or, in other words, *fermentation* will take place, and a quantity of air be extricated in consequence, so as to increase the distention. This often occurs to horned cattle, when brought suddenly into a luxuriant pasture, particularly clover. I once met with a case where a horse, getting loose during the night, found the corn chest open: next morning he was lying dead in the stable; and, on opening the body, a large quantity of oats was found in the stomach. In one part it was ruptured, and some of the corn had fallen through the opening into the cavity of the belly. I have since heard of two similar cases.

lation of blood in the vessels of the brain; the horse hangs down his head, or forces it against the wall, appearing insensible. It is necessary then to take a moderate quantity of blood from the temporal artery; but in debilitated constitutions copious bleeding is very injurious. It is advisable, when this system is observed, to contrive some means for supporting the horse's head. If by these means we succeed in procuring an evacuation of hard dung, there is reason to expect a recovery, particularly when, after emptying the gut by a clyster, or by the hand, a fresh quantity is soon after found in it. When the excrement becomes thinner, or the horse purges, we may be satisfied that the disease is removed, and then we have only to support the animal's strength with strong gruel given frequently, a small quantity of oats now and then, and tonic medicines. Should the horse be inclined to eat hay, a very small quantity only should be allowed at once. By adopting this plan, I have often succeeded in curing this dangerous disease; but it is absolutely necessary to watch the horse constantly, and apply the proper remedies frequently. Without this attention, success must not be expected. Besides, horses thus affected will often injure themselves during their delirium, unless constantly watched and prevented. I do not think it difficult to dis-

tinguish between this and that kind of staggers which depends simply on an affection of the brain: in the latter, there is a more furious delirium; the eyes and mouth are not tinged yellow; there is not that convulsive twitching in the breast; the fore legs do not give way now and then, as if the horse were on the point of falling; it generally attacks horses in high condition, particularly such as have been well fed and not sufficiently exercised.

The *stomach staggers*, on the contrary, generally attack horses of debilitated constitutions, that are worked hard and ill fed. When they attack horses apparently in good condition, we commonly find that they are rather old, and have been exposed to hard work: cases of this kind sometimes occur among waggon horses, particularly when, from the sickness or inability of one or two of the team, the remainder are obliged to perform the whole of the labour: sometimes it happens, as we have before observed, from feeding voraciously as soon as a horse returns from a long journey, and not taking in any water, or not enough, to moisten the food and render it digestible, or from swallowing the food hastily, without proper mastication. In whatever way this complaint is brought on, the symptoms are always nearly the same, varying

only in degree. The delirium is generally proportioned to the distention of the stomach. When this is considerable, the animal appears to suffer the most excruciating pain; and though generally delirious or stupid, it is very different from that furious madness, which inflammation of the brain occasions. When the stomach staggers have happened to horses at grass, they are generally found in the hedge; and, if taken out, are always attempting to go forward until they meet with some obstacle: and are so insensible, that, if a deep ditch or pit lie in their way, they do not endeavour to avoid it, but generally fall into it. I never saw a case in which there was not that convulsive twitching of the chest, and tottering of the fore legs, before described: yellowness of the eyes and mouth is also a constant symptom. I thought it necessary to be thus particular on this subject, as it is really a very serious and destructive disease, and, unless treated in the way I have pointed out, almost always proves fatal. I shall subjoin a few formulæ for the medicines to be given in this disease.

STOMACHIC PURGATIVE.

N° 1.

Barbadoes aloes . . .	6 dr. to 1 oz.
Calomel	1 dr. to 2 dr.
Cascarilla	2 dr.
Oil of peppermint . . .	20 drops.
Tincture of cardamoms . .	2 oz.
Water (as warm as it can be conveniently given). .	12 oz.

Mix for one dose.

The quantity of aloes must be regulated by the horse's size, strength, &c. I have sometimes added a dram of prepared ammonia to this draught, which, though it renders the calomel less active, seems to be a useful addition. If no evacuation be obtained in about twenty hours, give another dose, with half the quantity of aloes, and about 6 oz. of castor oil; and, during the interval, let some moderate stimulant be given; as,

N° 2.

Common salt	1 oz.
Water	8 oz.
Compound spirit of ammonia .	1 dr.

Mix.

N° 3.

Tincture of cardamoms . . . 2 oz.
Mint water . . . . . 12 oz.

Mix.

Clysters also are to be given often, composed of

Common salt . . . . . 4 oz.
Water . . . . . 3 or 4 quarts.
Linseed oil . . . . . 4 oz.

Mix.

Diseases of the Bowels.

It is a fortunate circumstance for horses, as well as for their owners, that immoderately strong physic is not so frequently given as it used to be. Among the numerous inconveniences arising from the strong purgatives recommended by writers on farriery, such as twelve or fourteen drams of aloes, either alone or with calomel *, there is one we have not hitherto noticed, which we shall now describe.

A few weeks ago, I was requested to attend a sick horse: it appeared, that the groom had given him 1 oz. of *Cayenne*, which operated with great violence, and had continued

Though they do not destroy a horse, they often weaken him so much, that it requires sometimes several weeks to restore the strength; but several cases have occurred where the *bowels* had been rendered so irritable from the violent effect of physic, that they became subject to troublesome and even dangerous diseases. A case of this kind has been already mentioned. (See page 253, note.) Sometimes obstinate costiveness is occasioned by it; at others, a constant tendency to diarrhœa and colic. When a horse, whose bowels have been thus injured, is attacked with colic or gripes, the strong remedies commonly employed, such as gin, pepper, &c., often prove fatal by exciting inflammation. The following draught will be found most useful, giving frequently small quantities of gruel, linseed tea, or any other mucilaginous fluid, and injecting a clyster of the same kind. The only method of curing the irritability or tenderness of the bowels radically, is to avoid every thing of an irritating quality, and very cold

to act two or three days after. On my arrival, it was too late to save the animal: he soon after died from inflammation of the bowels. The *Cape aloes* are certainly the weakest kind. I have seen several horses destroyed by larger doses than this, such as ten, twelve, or fourteen drams; and as often, and perhaps more, from *Succotrine* than *Barbadoes* aloes. (See note to page 213.)

water, until they have recovered their original strength.

THE DRAUGHT.

Oil of peppermint . . .	20 drops.
Tincture of opium . . .	½ oz.
Gum Arabic (dissolved in a pint of warm water) .	2 oz.

Mix for one dose.

The costiveness produced by the above practice occasions symptoms, which often deceive the inexperienced practitioner. The horse appears to be in pain; often makes fruitless efforts to dung; sometimes there is a suppression of urine, particularly when the proper remedies have not been seasonably applied; some degree of fever takes place; and at length colic pains. All these symptoms may be speedily removed, by drawing out the excrement with the hand; afterward throwing up a clyster, and giving the oily purgative. But I have seen hot drenches given in this complaint; and when these were found to increase the pain, instead of affording relief, the animal was profusely bled. When the suppression of urine was observed, diuretics were given. In some cases the disease is cured by an effort of nature; sometimes it continues so long as to cause inflammation of the bowels.

OILY LAXATIVE.

Barbadoes aloes	2 dr.
Prepared kali	1 dr.
Mint water	8 oz.
Castor oil	8 oz.

Mix for one dose.

Molten Grease.

THIS also is a disease of the intestines, and, generally, dependant on some constitutional affection. Horses that have been well fed and had but little exercise are more liable to this complaint. Though such horses appear sleek and fat, they are not fit for violent or long continued exercise, unless brought to it gradually; therefore, when suddenly put to work in this state, and particularly if employed in hunting or other violent exercises, a *fever* is often the consequence, which commonly depends upon general inflammation or increased action of the whole arterial system. In this disease, nature sometimes makes an effort to remove it; that is, a violent purging takes place; the *mucus*, which is constantly formed upon the inner surface of the bowels in order to lubricate and protect them from the action of any acrimonious matter that may happen to be passing

through, is now formed in greater quantity, and is often so abundant, as to appear something like fat mixed with the dung. When blood is drawn from a horse in this state, a large quantity of the inflammatory crust (the *coagulable lymph*, or buff-coloured jelly, before described) appears on it's surface*. (See *Bleeding*.)

* According to Mr. *John* Lawrence, molten grease consists in a colliquation, or general melting of the fat of the body, great part of which is absorbed, and thrown upon the blood and upon the intestines, when it is voided with the excrement. Mr. Blaine, in his Treatise on Veterinary Medicine, has called this explanation of the disease an absurdity! and though I feel all due respect for the efforts of Gibson, Bracken, and Bartlet, as well as for their commentator and panegyrist, Mr. *John* Lawrence, I am compelled by experience, and the knowledge I have obtained of the animal economy from the valuable instructions of those eminent teachers, Dr. Baillie, Messrs. Cline, Abernethy, and Cooper, to acknowledge, that Mr. Lawrence's description is really an *absurdity*, and affords a convincing proof of his incompetency either to teach or practise the Veterinary Art.

I am sorry to find myself under the necessity of making this remark; but, as an opinion so erroneous must lead to practical errours, I feel it a duty so to do. And I must beg leave to add, that what Mr. Lawrence has since written on the disease, his explanation of what he terms an *inadvertent inaccuracy* in his description, his satirical remarks on Mr. Blaine, and his attempt to show, that Mr. Blaine, in his explanation of the disease, meant to offer it to the world as a discovery of his own, and that Osmer, who wrote about 176[illegible]

Molten grease, therefore, is not to be considered as a distinct disease; but only as a symptom, which sometimes appears in *general inflammation*, or fever: it happens more frequently however in the latter. When a horse labours under fever, or general inflammation, we most commonly find some of the internal organs more affected than others. When there is a difficulty of breathing, the flanks moving with unusual quickness, and the nostrils expanded, it indicates an affection of the lungs; when *molten grease* appears, it shows, that the mucous membrane of the bowels is more particularly affected: sometimes both these parts are affected at the same time. The principal remedy in this disease is copious bleeding, according to age, strength, and other circumstances of the case. (See *Bleeding* and *Fever*.) It is often necessary to repeat the operation; oily laxatives are to be given, and rowels inserted in the chest and belly, if the lungs be the principal seat of the disease; and the sides may be blistered, or the mustard embrocation rubbed on the sides and belly. In *molten grease*, or when the bowels are affected, if there be a copious purging, let no attempt be made to suppress it; rather let it be encouraged, by giving fre-

had *anticipated* him, appears to me a strong confirmation of Mr. Blaine's accurate knowledge of the animal economy, and of Mr. Lawrence's total ignorance of the subject.

quently decoction of linseed, gum Arabic dissolved in water; starch, or the powder of arrow root, boiled in water. When the dung is voided only in small quantity, but frequently, particularly if there be any knobs mixed with it, give a pint of castor oil, which may be repeated, if necessary, about two days after. In this case, also, it will be proper to rub the mustard embrocation on the belly. Should the disease continue after this, and particularly if there be considerable irritation about the anus, the horse frequently ejecting a small quantity of excrement, and appearing to suffer much pain, the opiate clyster may be given. If this appear rather to increase than remove the pain and irritation, the dose of castor oil must be repeated, and a clyster thrown up, composed only of water-gruel and a little oil*.

Mr. Blaine, in his Treatise on Veterinary Medicine, describes this disease somewhat differently, and considers it to be the same as the human dy-

* It is necessary on this occasion, particularly, to be careful in exhibiting the clyster, as the gut is so extremely irritable and tender, that, if the pipe be rough, and introduced without caution, it may rather do harm than afford relief: therefore, let the pipe be perfectly smooth, covered with oil or lard, and not forced in with violence: it is probable, that a small short tube of bone, about three times the bulk and length of the pipe used in human medicine, would be preferable on this occasion to that commonly employed.

sentery. I must confess, however, that, during an extensive practice of ten years, I have never met with a single case, that resembled the dysentery described by medical authors. I have often observed, during the progress of symptomatic fever, internal inflammation, mucus mixed with the dung, which had sometimes the appearance of part of one of those long white worms so often found in the horse's bowels; at others it resembled a membrane. I have observed the same thing in horses apparently healthy, or after the operation of very strong physic. I have also seen many cases, where there was *tenesmus*, or considerable irritation in the rectum, the horse frequently voiding a small quantity of dung, and appearing in pain. But this was always either a symptom of some more important complaint, and easily removed, or the effect of physic, and very unlike dysentery. (See *Inflammation of the Lungs* and *Bowels*, and *Symptomatic Fever*.)

OPIATE CLYSTER.

Opium	1½ dr.
Warm water	8 oz.

Mix.

To this add about a quart of starch water; that is, starch boiled in water in the usual way, and of a proper consistence for a clyster.

Diseases of the Urinary Organs.

SUPPRESSION or stoppage of urine may arise from several causes. It generally takes place when horses are attacked with flatulent colic, and is then improperly considered as the cause of that complaint; but when the colic is removed, the horse stales freely. In obstinate cases of suppression, where the horse has not been observed to stale for two or three days, it is necessary to examine the bladder, which may be easily done by introducing the hand into the rectum, or straight gut, through which the bladder is readily felt, when distended with urine: when the bladder is found in this state, an evacuation must be speedily obtained, or the animal may be destroyed. In mares, there is no difficulty in introducing a catheter, or hollow tube, into the bladder, through which the urine will flow out. In a horse, this operation is not practicable, on account of the great length and curvature of the passage; it has been recommended, however, in such cases, to introduce a bougie, or long smooth probe, into the passage, and to pass it forward, until it arrives at that part where the principal curvature is; that is, about two or three inches below the anus. The probe being held steadily in this situation by an assistant, the

operator is to make an incision carefully, so as to cut upon the top of the probe, and lay open the passage. This being done, a hollow tube, even the finger, may be readily passed into the bladder, and let out it's contents.

In making this incision, the skin is to be drawn on one side, so that, when the operation is finished, and the urine evacuated, the opening in the urethra, or passage, and in the parts which cover it, will not correspond; and the opening in the former will be completely covered. Without this contrivance, a fistulous opening would probably remain during the horse's life: indeed, such a consequence is to be apprehended, in whatever way the operation is performed; but, fortunately, such obstinate cases of suppression very rarely occur.

When the bladder, upon being examined through the rectum, is found empty, or when it cannot be felt at all, the suppression must depend on a disease in the kidneys. When these organs are much inflamed, they cease to form urine, or form it only in very small quantity; but the most common cause is a gradual decay of the kidney. (See *Inflammation of the Kidneys*, page 56.) This is known by the horse having become thin and weak gradually; having been attacked before with similar complaints, but in a less degree; having been observed to move his hind legs awkwardly in

trotting; and giving way when pressed upon the loins. When it is clearly ascertained, that the suppression of urine arises from this cause, and particularly, if the horse be old, and extremely feeble, there is no chance of recovery; and death soon terminates his misery. It may happen, however, that the kidneys cease to perform their office, or do it imperfectly, from other causes, without having suffered an alteration or decay in their organization or structure. In such cases, provided no symptoms of inflammation exist, the following drink may be given, and repeated when necessary.

Balsam of capivi	½ oz.
Mint water	12 oz.

Mix for one dose.

It may be necessary, on some occasions, to give a larger quantity of the balsam: it is advisable, however, to begin with a small dose, and carefully watch it's effect: if it appear to increase the animal's pain, without causing an evacuation, there is reason to suspect, that some mistake has been made, as to the *cause* of the suppression; and the symptoms should be again carefully investigated. It has been observed before, that suppression of urine is most commonly occasioned by spasm in the neck of the bladder, and sometimes

by an accumulation of hard excrement in the rectum. In the former case, the camphorated ball (see page 100) soon affords relief: in the latter, it may be obtained by drawing out the hard excrement with the hand, clysters, and a laxative.

We sometimes observe horses frequently endeavouring to stale, voiding only very small quantities, and that with some degree of pain, or straining. Such symptoms depend on a diseased irritability or tenderness of the bladder; so that, when only a small quantity of urine gets into it, it immediately contracts, in order to squeeze it out. It may sometimes depend on the urine being unusually strong, or acrid: in either case, the following drink may be given, and the horse should be allowed to drink freely. If he refuse to drink, he should be drenched frequently with water-gruel, decoction of linseed, marshmallows, &c. If he be costive, give castor oil and clysters. This disease is commonly occasioned by *blisters*, the cantharides of which they are composed being absorbed into the circulation.

THE DRAUGHT, OR DRINK.

Camphor	1½ to 2 dr.
Powdered opium	½ dr.
Gum Arabic, dissolved in warm water	4 oz.

Mix for one dose.

And let it be repeated, if the symptoms continue, about twelve hours after, giving, during the interval, gum Arabic dissolved in water, decoction of linseed, &c. From too great exertion in leaping, or from other causes, a horse sometimes voids *bloody urine.* In such cases, the mucilaginous drinks, composed of gum, linseed, &c., are proper. It is necessary, also, to give the following draught, night and morning, until the urine assumes it's natural colour.

Pomegranate bark . . . . . 1 oz.
Water . . . . . 1 pint.
Boil them about half an hour: strain off the liquor, and add,
Powdered alum . . . . . 1 oz.
For one dose.

If this prove ineffectual, add to it about a dram or two of vitriolic acid, or even more, provided it be so diluted with water, or the above decoction of pomegranate, as to do no injury to the throat; this point may be determined by dipping the finger into the mixture, and applying it to the tongue. If it be so sour as to occasion some degree of pain, or a very unpleasant sensation, more water may be added.

When the disease continues some time, there is danger of it's proving fatal: the horse's

strength must then be supported by the most nutritious diet; and tonics, such as bark, with opium. (See *Vol. II*, or *Materia Medica*.) Vitriolated iron may also be tried, warm embrocations may be rubbed upon the back or loins, or a warm plaster laid on it, composed of common turpentine, Burgundy pitch, and bees' wax; four parts of the first, two of the second, and one of the third article. When the urine assumes a brown, or coffee colour, the pulse becoming very quick and weak, intermittent or irregular, and the animal getting gradually more feeble, there is no chance of recovery.

Grease.

THIS disease has been described before in page 110.

In inveterate cases of grease, the heels often become ulcerated, sometimes in a considerable degree. These ulcers are generally very painful, particularly when situate on the back part of the pastern; they are also more difficult to cure in this situation, from the frequent motion of the part. In the treatment of these ulcers, or *cracks*, as they are often termed, cleanliness is of great importance; and, when they appear inflamed and pain-

ful, apply a soft poultice, in which a little Goulard has been mixed, for two or three days. The following ointment (N° 1) may then be applied, spread on tow, and secured with a light thin bandage. It often happens, that cracks, or ulcers, appear in the heels, without that general swelling of the leg, and discharge of matter, which constitute the disease named *grease*. It may then be soon cured, by applying the astringent ointment, and giving a few doses of the *diuretic alterative* (see *Vol. II*, or *Materia Medica*): but when it is accompanied by the grease, laxatives or purgatives are proper, according to the condition of the animal. If the ulcers in the heel be deep, exercise appears to prevent their healing; and I have found it the best plan, when such ulcers are not accompanied with much swelling, to keep the horse in the stable, until they are nearly healed, dressing the sore with the ointment (N° 1), and applying a bandage, so as to keep the part as steady as possible. When this plan is adopted, it is necessary to keep the horse on a cooling opening diet, and to rub the legs frequently and briskly with the hands: a few of the diuretic alterative powders should also be given. When proud flesh, as it is commonly termed, appears in the ulcers—that is, when the new flesh rises above the level of the skin—it must be destroyed

by caustics; such as blue vitriol powdered, or dissolved in warm water, or lunar caustic. When this is neglected, they sometimes increase to a large size, and become almost of a horny consistence, in which state they are commonly named *grapes*. Should the ulcer continue foul, after applying the poultice, without that red appearance, which indicates healing, the hot solution of blue vitriol is to be poured upon it, and the poultice repeated: this will cause a separation of the foul parts, or a sloughing, as it is termed; after which the sore will look red and healthy, discharging white matter, and gradually filling up with new flesh, which, if it rise above the surface, is to be repressed with caustic.

In recent cases of grease, in which the heels are inflamed and swollen, and discharging a whitish coloured matter, I have seen much good done by fomenting them for a considerable time with warm water, in which a small quantity of Goulard has been mixed, and applying immediately after the Goulard poultice. In obstinate cases of grease, where the matter discharged is very solid, the fermenting poultice is useful; that is, a poultice of linseed meal, warm water, and yeast; this soon removes the offensive smell, and causes a more healthy or less acrid matter to be formed.

Powdered charcoal has been recommended for the same purpose.

In these inveterate cases, *rowels* in the thigh are necessary, and should always be employed before any astringent applications are used. This unpleasant remedy, however, is only necessary when the disease has continued some time. In recent cases, the Goulard poultice and mild purgatives will soon reduce the inflammation considerably; and then the cure is easily accomplished by astringent lotions. To prevent a return of the complaint, exercise and good grooming are indispensably necessary: frequent hand-rubbing of the legs, and a diuretic powder now and then, are also useful. Horses with white hind legs, or such as are much disposed to swelling of the legs, should be bandaged for some time, particularly after hard work, keeping the bandage constantly moist with a solution of alum in water. In those hard habitual swellings, which are sometimes a consequence of grease, I have several times seen blistering and firing tried, but never saw them do any good: the best palliative in such cases is the bandage applied as before directed.

In some cases of grease, the inflammation seems to extend to the cellular membrane under the skin, causing more severe pain and lameness,

than when it is superficial. This inflammation generally terminates in an abscess of the heel, which bursts, and leaves a deep ill-looking ulcer. After this, the general swelling of the leg subsides, and the animal appears to be considerably relieved: the ulcer, however, is extremely irritable, and difficult to heal, particularly if the horse be exercised. By applying poultices and warm digestive ointment, and by keeping the horse at rest, the ulcer gradually heals.

OINTMENT.

N° 1.

Fresh hog's lard	4 oz.
White lead, finely powdered .	1 oz.

Mix.

ASTRINGENT OINTMENT.

N° 2.

Hog's lard	4 oz.
Palm oil	2 oz.
Fine olive oil	1 oz.

To be melted, by placing the pot which contains it in boiling water: when melted, stir in 1½ oz. of the water of acetated litharge, and continue stirring till nearly cold.

When ulcers of the heels do not appear disposed to heal, the above ointment should be

changed for one more stimulating, or the sore should be washed with a solution of blue vitriol previous to it's application.

STIMULATING OINTMENT.

Ointment of yellow resin . . . . . 4 oz.
Olive oil . . . . . ½ oz.
Red nitrated quicksilver, in fine powder ½ oz.

Mix.

Cough.

THIS disease so frequently occurs, and is so often rendered incurable by improper treatment, that it appears necessary to give it a more particular consideration than we have done in the former editions of this work. *Catarrh*, or cold, is generally the origin of those troublesome and often incurable coughs, which have been named *chronic coughs*. Sometimes, however, they depend on irritation in the stomach and bowels. When a horse *catches cold*, as it is termed, if the attack be not violent, it is seldom thought necessary to take him from his usual work; he is bled moderately, takes a little nitre, and the complaint receives no further attention, except a

bran mash now and then, with nitre. By continuing his work, and becoming occasionally exposed to wet and cold, there is constantly an undue determination of blood to the membranes of the throat, windpipe, &c.; or, in other words, the catarrhal inflammation is kept up by these means, till at length the membranes become thickened and irritable to such a degree, that the cold air, or the vapours and dust of the stable, irritate the membrane of the windpipe, so as to excite coughing almost continually. When the inflammation has been but moderate, the irritability of these membranes will not be so considerable, and the horse will only cough now and then; or when the membrane is irritated by the food or water, or by the dust of his hay or corn, or, perhaps, by too great a secretion of mucus*.

* All these membranes are lubricated by a mucous fluid, which is constantly forming on their surface. When perspiration is checked by exposure to cold, an unusual quantity of blood is thrown upon these membranes; which causes a larger quantity of the mucous fluid to be formed. Hence the discharge from the nose in catarrh: for as the horse breathes only through the nostrils, the mucus discharged from the lungs by coughing does not pass into the mouth, as in man, but into the nostrils. It is probable, that the mucus formed upon the membranes, when affected with catarrh, is rather of an acrid stimulating nature, from being loaded with saline matter: this indeed is sometimes so considerable, as to inflame the skin of the lip over which

In violent colds, the inflammation of the membranes is often very considerable, so as to render swallowing painful and difficult, and cause a *rattling* in the head, as it is termed; that is, from the increased secretion of mucus within the nostrils, or from swelling of the membranes which line them, the air is interrupted in it's passage, causing a peculiar sound in breathing. In some cases, the inflammation extends to the branches of the windpipe, in consequence of which many of the finer branches are either partially, or wholly plugged up by the coagulable lymph which is poured out. Sometimes there is so much coagulable lymph poured out in the windpipe as to render respiration difficult, and cause that sonorous breathing which is technically named *roaring*. When some of the branches of the windpipe are plugged up with coagulated lymph, it causes also *quickness* of breathing: for the lungs being now unable to contain so much air as they did before, the animal is obliged to inspire more frequently to make up the deficiency. The cough in this case is very distressing and almost continual, and sometimes recurs with such violence, that we feel apprehensive of it's bursting

it passes. This happens also sometimes in diseases of the eye, where the tears, or water from the eye, are so acrid, as to inflame the skin of the nose, which it flows over.

some blood vessel. Broken wind is generally the consequence of this stage of catarrh. (See *Broken Wind.*) When the complaint has proceeded thus far, there is no probability of curing it; but, if it be properly treated at first, it scarcely ever runs such lengths; it is, therefore, highly necessary to pay attention to colds, though they may appear trifling, and keep the horse from work until perfectly cured. Were this done, we should seldom hear of incurable coughs, roaring, broken wind, &c.—complaints now so common, and so frequently the cause of disputes and lawsuits in the purchase and sale of horses. On the first attack of *cold* let the horse be bled in proportion to his strength and the violence of the attack: then give a laxative, and let his diet consist of hay and bran mashes. As checked perspiration is commonly the cause of the disease, the head, ears, and whole body, should be kept much warmer than usual: a close stable, however, is improper. Warm water and warm mashes should be given frequently; and when the horse is wisped or brushed, which should be done twice or three times a day, there should be an active man on each side for the purpose: when they have finished, and replaced the clothes, let them rub the legs briskly for some time with their bare hands; the horse should also be well littered, and, as the

straw becomes damp from his staling upon it, let it be immediately removed, and some fresh dry straw thrown in. After the operation of the laxative, give one of the fever powders, or the following ball, every night and morning. If it occasion profuse staling, or purging, it should be given in smaller quantity, or less frequently, or discontinued a day or two. When the symptoms do not abate after the bleeding and laxative, and particularly if the cough increase, and the horse appear to feel pain and difficulty in swallowing water, a *strong blister* should be immediately applied about the throat and under the ears, and the bleeding should be repeated. By these means the most violent colds are generally cured in a short time. But when the complaint has been neglected at first, or improperly treated, a discharge of white matter often takes place from the nostrils, and the horse becomes very feeble. Under these circumstances bleeding would be improper: but a very mild laxative may be given, unless the bowels are already open; and a blister to the throat is eminently useful. The discharge should be encouraged by *steaming the head;* that is, by tying the horse's head to the rack, and throwing a hot mash into the manger immediately under his nose. Strong gruel should be given freely to support his strength; and the ball

(N° 2) every night. In the third stage of catarrh, that is, when coagulated lymph has been thrown out upon the membranes of the windpipe or it's branches, there is little chance of a cure*.

The following expectorants may afford some relief, however, and should therefore be tried. Blistering the throat has also been recommended; but I have several times given it a fair trial without success.

The next kind of *cough* to be described is that which seems to depend merely upon an unnatural degree of irritability of the membrane which lines the *larynx*, or top of the windpipe; and may be distinguished by being less violent, and not being accompanied by an unusual quickness of breathing†: the cough generally comes on after drink-

* I have heard of three cases, where a horse, having had that violent and distressing cough for some time, which has been described in the text as a consequence of the third stage of catarrh, was spontaneously relieved, by coughing up a large piece of coagulated lymph. In one case the horse was galloped violently up a hill for the purpose: the cough which this exertion occasioned was so violent, that the animal could scarcely stand; at length a considerable quantity of coagulated lymph was discharged, and the horse, though supposed to be broken winded before, perfectly recovered.

† It is probable, that, in some cases, this kind of cough depends upon the stimulating quality of the mucous fluid,

ing or feeding, particularly when the hay or oats are dry and dusty. This kind of cough is always more troublesome in a close stable.

A blister to the throat is useful in this case, and, if that be thought inconvenient, some warm embrocation should be rubbed about the throat and under the ears twice a day, and the head and neck kept warm: the hay and oats should be free from dust, and sprinkled with water. If the horse be inclined to eat his litter, let him be muzzled; if costive, give a mild laxative, and afterward the anodyne ball or draught every morning: moderate exercise is useful. It is sometimes difficult to cure this kind of cough; and, when apparently removed, it often returns from trifling causes. By persevering in the above mode of treatment, however, I have generally succeeded.

With respect to the cough which is caused by worms in the stomach or bowels, it may be distinguished by the general appearance of the animal: he is commonly hidebound, has a rough dry coat, and becomes thin, though well fed; he appears dull, and is fatigued by moderate exercise. The most certain criterion, however, of the existence

which is formed upon the part. It is advisable, therefore, to add to anodyne medicines such as are of an oily or mucilaginous quality, which, if not emollient, are certainly innocent.

of worms in the bowels is the appearance of a white stain just beneath the anus, or their being voided with his dung.

This kind of cough is less violent, but more frequent than the former kinds. (For the treatment of it, see *Worms*.)

BALL FOR CATARRH.

N° 1.

Emetic tartar . . . . . 1 dr.
Powdered aniseed . . . . 3 dr.

Sirup enough to form a ball for one dose.

BALL.

N° 2.

Canella bark, powdered . 1½ dr.
Emetic tartar . . . . 1½ dr.
Powdered opium from 1 sc. to 1 dr.
Camphor . from ½ dr. to 1½ dr.

Sirup and flour to form a ball for one dose.

EXPECTORANT BALL. (See page 67.)

N° 3.

Gum ammoniacum, from 3 to 5 dr.
Powdered squills . . . . 1 dr.
Opium . . . . . ½ dr.
Powdered ginger . . . . 1 dr.

Sirup enough for a ball for one dose.

Remark.—Other formulæ may be seen in the second volume, or *Materia Medica.*

EMBROCATION FOR THE THROAT.

N° 1.

Camphor	½ dr.
Oil of turpentine	2 oz.

Mix.—Add,

Olive oil	4 oz.
Strong water of ammonia	1½ oz.

Mix.

ANODYNE DRAUGHT.

Oxymel of squills	2 oz.
Opium (mixed with 8 oz. of water)	from ½ dr. to 1 dr.
Linseed oil	2 oz.

Mix for one dose.

ANODYNE BALL.

Opium	from ½ dr. to 1 dr.
Camphor	1 dr.
Powdered aniseed	½ oz.

Soft extract of liquorice enough to form a ball for one dose.

On Shoeing.

In describing the method of shoeing *flat* and *convex* feet, a wide concave or hollow shoe has been recommended in all the former editions of this book: I have to acknowledge, however, my obligation to the honourable Newton Fellowes, for suggesting to me a much better method of shoeing such feet. In flat, convex, or pumice feet (see page 167, 168; and plate iv, fig. 1), the *sole* is so thin, as to be incapable of suffering pressure without giving pain to the animal, and causing him to go lame, and so flat or even convex as to be much exposed to pressure. The shoe commonly employed for such feet is *wide* and *hollow*, so that it bears only on the *crust*, a space being left between the *sole* and the other part of the under surface of the shoe. When the horse has travelled a short time on the road, this space becomes filled with dirt, gravel, &c., so that the *sole* is exposed to the same pressure as if the shoe were flat, or the horse without shoes; it is obvious, then, that a shoe so *narrow* as to cover only the *crust*, and so *thick* as to raise it about three quarters of an inch from the ground, will more effectually protect the tender sole, than the wide hollow shoe; unless the horse be going upon a hard even

surface, or the rider frequently dismounting to pick out the dirt, which accumulates under the shoe. I am convinced, from the trial made of this narrow shoe, both by Mr. Fellowes and myself, that it will be found the best method of shoeing *flat* or *convex* feet; and it appears to me very probable, that, upon a fair trial, it would be found the best shoe for general use. Perhaps even heavy draught horses would do better with it, than with the wide heavy shoe, which is now universally employed for them. It may be necessary to remark, that though the narrow shoe for covering the *crust* only was recommended by the late lord Pembroke, and employed by his order in his own regiment, the First or Royal Dragoons; yet, for it's particular application to *flat* or *convex* feet, I believe we are indebted to the honourable Newton Fellowes.

THE END.

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DIRECTIONS FOR PLACING THE PLATES.

Plate V. to face the Title page.
VI. ——— page 162.
XV. ——— page 178.

The remainder, in numerical order, to follow this page.

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Fig. 1.



Fig. 3.

Fig. 2



Fig. 1. **A perfect Hoof in a State of Nature**.—*a* the Side. *b* the Bars. *c* the part on which the Heel of the Shoe is to bear, and where the Shoe is to terminate. *d* the Heels in a posture of the Hoof. *e* the seat of Corns. *f* the Frog.

Fig. 3. A sound Hoof properly shod.

Fig. 1.



Fig. 2.



Fig 1. A Hoof prepared in the common way, in which the Frog has been deprived of its hard surface, the Bars removed a great part of the Sole cut away. *a the Frog. b the Sole.*

Fig. 2. A Hoof contracted in the highest degree.







Fig 1. The Concave Shoe for Feet where the Soles are flat or convex.

Fig 2. The bar Shoe for tender Frogs.

Fig 3. The Shoe for a sound Foot.

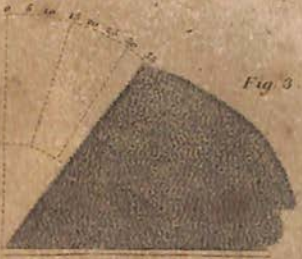


Fig 3



Fig 1

N. the proper degree of obliquity in the Hoof is marked 45 in the Scale.

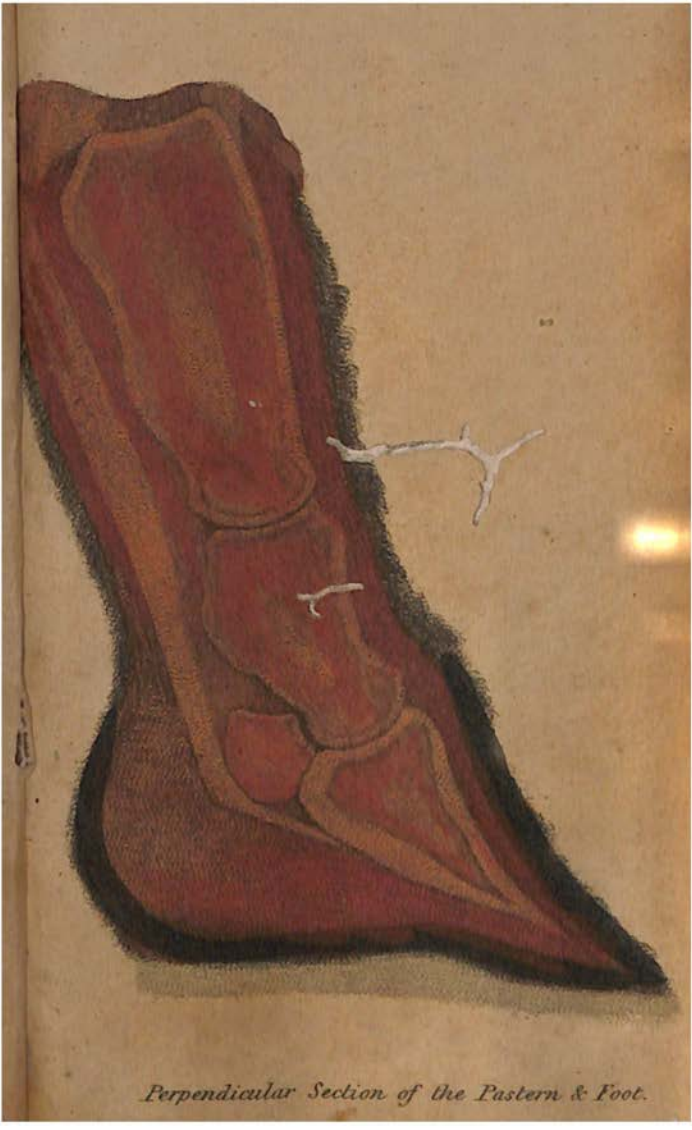


Fig 2.

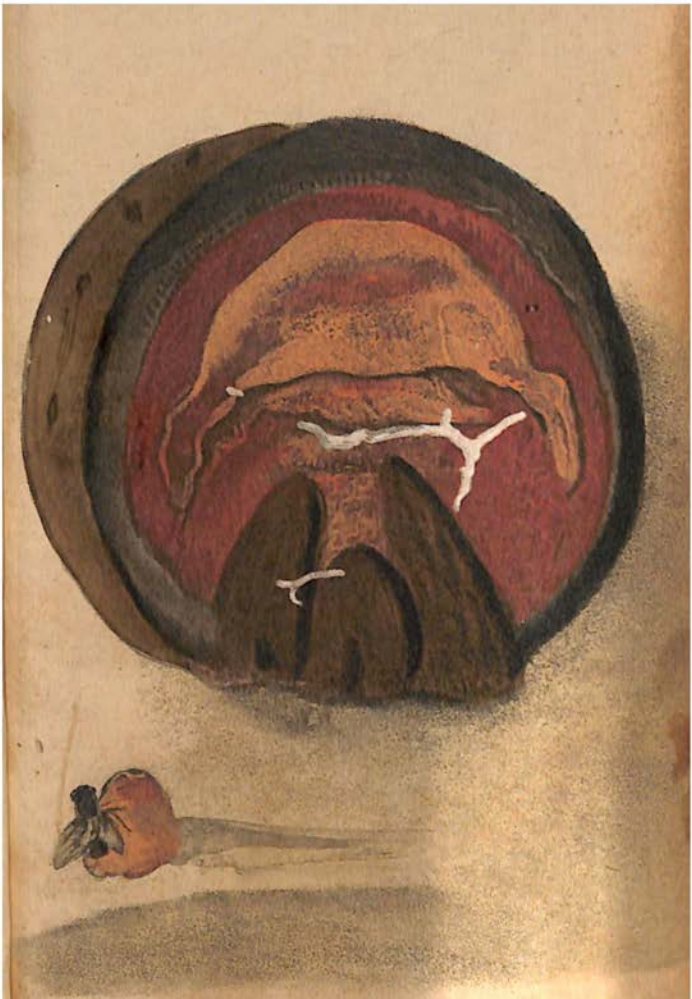
Fig 1. A side view of the sound Hoof with a *scale* shewing the proper degree of obliquity to be 45 degrees of elevation. a *the Quarter* b *the Heel*. d. *the Toe*.

Fig 2. Side view of the Convex or Pumice Foot in which the Hoof has lost its natural form and approaches 5 degrees toward the Horizontal line.

Fig 3. A Hoof approaching too nearly the perpendicular.



Perpendicular Section of the Pastern & Foot.



The foot divided transversely a little below the Coronet, shewing the horny matter, the elastic membranes, between the Coffin-bone and Hoof, the Coffin-bone, and the Navicula or nutbone.



A back view of the Bones, Ligaments, and Tendons. — a a a *the back Sinew.* b *its sheath.* c c *the lateral Cartilages.* d *the bottom of the Coffin-bone.*



A back view of the Bones, Ligaments and Tendons, *the Tendons having been removed in order to shew the Ligaments that lie immediately under them.* a *the smooth surface over which the back sinew passes.* b *the ligament which encloses the back Sinew, forming a sheath for it, and keeping it in its situation; in this preparation some part of the ligament was removed in order to shew the smooth surface* a. d d d *a ligament going from the sesamoid Bones to the small Pastern; its use seems to be that of giving strength to the Pastern Joint, which, from the oblique position of the Pastern Bones, would otherwise have been very insecure*

I believe this ligament is sometimes broken in violent strains, or when a Horse is said to be broken down.



A front view of the Bones. a a *the sesamoid Bones* b *the large Pastern.* c *the small Pastern.* d *the Coffin-bone.*



A back view of the Bones a a *the sesamoid Bones.* b *the large Pastern.* c *the small Pastern.* d *the Navicula or Nutbone,* e *the bottom of the Coffin-bone.*











A Frost Shoe. —*This Shoe is designed for slippery roads, and on such occasions renders a Horse perfectly secure; the sharp wedge like substance at the Heel being merely screwed into the Shoe, may be removed and applied again at pleasure.—a the Shoe complete, b the female screw in the Heel, c the wedge that screws into it, d its screw, e the key for fixing and removing the wedge.*



THE HOOF SEPARATED FROM THE SENSIBLE PART (Plate 5)

N.B. *The drawing was taken from a Foot of a different size from that of Plate 5.*



REPRESENTATION OF A GOOD HOOF WELL SHOD.



REPRESENTATION OF THE HOOF PREPARED FOR THE SHOE.

N.B. *The subjects from which Plates 16 & 17, were taken were considered as good Feet; but a perfect Foot is rarely met with.*


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